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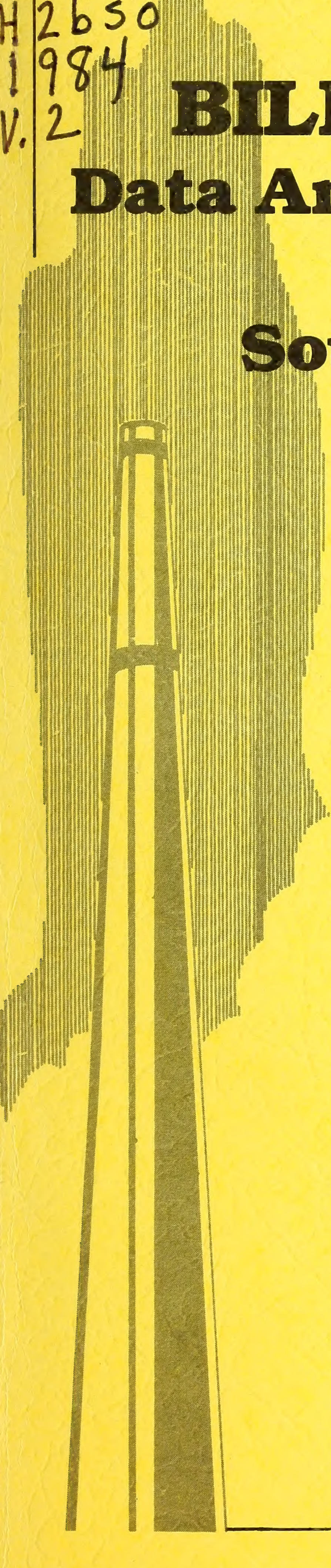

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Data Analysis, Model Validation
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Source Determination

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VOLUME II

Tables and Figures

BY

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April, 1984

PREFACE

This report is divided into three volumes for printing and distribution purposes. Volume I contains the text of the report. It includes narratives on data analysis, model validation and source determinations.

Volume II contains tables and figures that are referenced in the text. The lists of tables and figures are repeated in this volume for easy reference.

Volume III is an appendix to the text which contains a display of the air quality and meteorological data collected during the study year. Supportive material is also provided in this separate volume.

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LIST OF AIR MONITORING SITES

Site Number	Site	East Coordinate	North Coordinate	Elevation (FT)
0080 061	Metra (Fairgrounds)	695.9	5074.6	3110
0080 062	Taft School	694.8	5072.0	3115
0080 063	Shawnee Park	702.1	5077.5	3130
0080 064	North Johnson	700.9	5078.4	3060
0080 065	Lockwood Park	699.9	5075.6	3140
0080 066	Coburn Road	697.6	5073.3	3380
0840 014	New Farm	672.2	5059.5	3270
0840 015	Laurel-BN	675.1	5059.5	3280

TABLE 2

BILLINGS SO_2 STUDY

MAXIMUM ONE HOUR CONCENTRATIONS

January, 1982

Parts per Billion -- SO_2

Sites

Day	B061	B062	B063	B064	B065	B066	L014	L015
1	53	95	140	107	167	294	42	35
2	19	140	32	14	44	392	70	46
3	16	30	108	192	101	357	72	56
4	50	125	85	70	118	201	25	95
5	1	45	17	10	5	156		24
6	30	58	195	381	267	280		75
7	10	10	180	132	211	409		103
8	18	55	421	150	192	359		97
9	0	70	8	1	1	108		32
10	21	96	10	0	33	146		37
11	45	118	24	4	98	97		56
12	7	26	128	161	50	127		63
13	25	62	200	95	94	78		83
14	5	43	206	67	44	65		43
15	13	44	18	8	60	31		15
16	4	20	34	75	45	160		121
17	8	24	82	182	261	171		55
18	49	72	157	273	149	119		54
19	17	124	23	4	9	142	44	47
20	12	147	15	4	40	125	72	76
21	5	91	12	4	35	123	11	24
22	12	90	25	29	77	141	86	69
23	7	81	11	5	7	177	90	84
24	57	101	137	108	108	123	87	101
25	145	74	118	183	113	200	63	67
26	36	31	73	82	58	131	43	74
27	3	20		19	37	87	17	
28	92	131		227	148	290	72	35
29	18	14		134	257	155	12	3
30	65	143		103	134	205	67	
31	27	55		51	196	185	28	

TABLE 3

BILLINGS SO_2 STUDY

MAXIMUM ONE HOUR CONCENTRATIONS

February, 1982

Parts per Billion -- SO_2

	Sites							
Day	B061	B062	B063	B064	B065	B066	L014	L015
1	13	20		69	210	72	14	5
2	23	121		1	0	48	61	54
3	63	18	70	335	104	105	57	67
4	15	20	147	273	187	100	30	70
5	9	21	70	135	79	77	17	129
6	13	17	249	35	95	65	25	123
7	19	55	73	3	86	55	7	6
8	4	43	29	20	77	210	13	2
9	36	21	189	330	228	160	40	24
10	12	15	78	147	126	165	18	63
11	19	27	190	206	136	167	45	33
12	37	41	77	217	113	180	61	82
13	18	16	106	174	157	146	56	86
14	35	40	95	151	94	116	22	62
15	39	21	70	90	116	169	36	63
16	105	128	79	128	61	231	29	40
17	26	26	80	200	144	111	17	41
18	37	12	315	150	145		11	35
19	18	12	160	79	91	72	42	42
20	12	20	156	298	227	342	26	39
21	38	77	108	204	149	214	25	56
22	13	94	10	3	122	82	39	32
23	3	31	19	2	83	70	14	23
24	7	35	72	59	95	67	16	18
25	106	98	125	134	124	265	34	68
26	80	78	217	125	54	157	50	17
27	24	44	209	355	95	167	65	36
28	42	22	129	120	135	157	22	28

TABLE 4

BILLINGS SO_2 STUDY

MAXIMUM ONE HOUR CONCENTRATIONS

March, 1982

Parts per Billion -- SO_2

Sites

Day	B061	B062	B063	B064	B065	B066	L014	L015
1	131	169	30	18	45	242	45	31
2	31	81	35	5	5	64	30	28
3	174	224	120	68	85	195	50	47
4	27	106	12		3	7	42	38
5	10	46	105	155	100	61	43	55
6	20	26	19	19	56	83	9	7
7	12	31	130	140	136	102	10	16
8	26	70	32	28	3	76	4	3
9	16	12	102	145	150	104	52	36
10	23	31	90	51	250	193	44	18
11	44	15	90	147	106	208	51	35
12	5	6		46	75	80	17	6
13	11	8		77	95	131	16	57
14	41	130		216	166	117	77	16
15	31	113		22	133	183	3	9
16	12	71		36	27	75	14	11
17	18	84		0	1	144	8	8
18	41	57		0	0	77	3	7
19	0	3		0	260	53	3	1
20	4	18		23	134	10	14	5
21	14	32		150	87	36	11	59
22	16	13		191	67	174	26	59
23	5	47	7	148	146	110	9	5
24	20	27	10	5	34	25	10	10
25	63	255	110	136	133	62	30	2
26	42	161	130	26	184	116	62	47
27	15	50	69	140	106	54	22	65
28	21	82	20	5	141	62	6	2
29	8	24	40	25	61	86	10	0
30	4	7	99	15	35	108	40	27
31	38	168	29	25	42	263	9	5

TABLE 5

BILLINGS SO_2 STUDY

MAXIMUM ONE HOUR CONCENTRATIONS

April, 1982

Parts per Billion -- SO_2

	Sites							
Day	B061	B062	B063	B064	B065	B066	L014	L015
1	15	76	20	9	123	113	14	9
2	0	38	9	2	449	5	4	2
3	24	48	8	1	1	38	16	12
4	0	17	9	1	115	63	6	3
5	61	19	32	80	14	82	60	25
6	40	128	265	210	149	148	29	29
7	0	7	8	1	180	38	4	3
8	4	16	40	88	40	88	42	32
9	3	5	32	10		141	14	32
10	4	8	130	100		122	33	74
11	13	14	77	82		35	22	52
12	6	9	63	88	24	29	14	19
13		15	95	69	80	14	13	49
14		7	50	64	8	20	22	40
15		11	73	13	26	12	16	16
16		5	69	15	59	80	10	7
17		8	55	102	185	15	9	36
18		2	29		91	10	13	10
19		14	135	2	657	19	9	5
20		6	47	86	52	18	17	37
21		15	35	98	56	20	42	77
22		8	49	110	40	50	57	61
23		8	63	170	70	65	12	91
24		88	180	304	243	310	50	33
25		69	8	0	0	40	10	11
26		35	8	2	118	140	28	16
27		38	31	62	39	15	14	21
28		113	127	28	82	220	15	45
29		2	13	4	74	19	12	12
30		30	170	106	76	43	68	60

TABLE 6

BILLINGS SO_2 STUDY

MAXIMUM ONE HOUR CONCENTRATIONS

May, 1982

Parts per Billion -- SO_2

Sites

Day	B061	B062	B063	B064	B065	B066	L014	L015
1		4	70	118	63	19	17	
2		12	68	46	165	45	27	
3		31	63	140	322	111	39	17
4		1	19	9	88	19	7	4
5		4	70	97	21	14	16	14
6		0	20	56	13	29	9	3
7		12	30	17	45	7	36	29
8		35	20	21	188	44	7	5
9		8	10	0	132	9	4	1
10		45	10	1	92	32	4	3
11		27	19	5	84	40	6	2
12		8	59	121	18	25	46	44
13		14	22	17	85	32	25	9
14		23	55	84	60	25	40	19
15		6	68	129	30	20	22	10
16		44	9	2	70	19	6	3
17		19	39	25	40	20	33	38
18		193	19	11	230	210	24	19
19		27	9	11	130	25	9	6
20		35	18	23	100	19	56	29
21		27	100	148	120	79	32	75
22		160	170	175	106	115	110	100
23		155	20	13	102		16	14
24		59	79	132	82	11	25	81
25		5	82	84	96	105	48	83
26			40	95	87	75	4	5
27			9	1	53	17	7	10
28			71	1	74	18	2	2
29			150	33	35	23	1	11
30			18	2	182	22	43	3
31			91	220	81	11	65	48

TABLE 7

BILLINGS SO_2 STUDY

MAXIMUM ONE HOUR CONCENTRATIONS

June, 1982

Parts per Billion -- SO_2

				Sites				
Day	B061	B062	B063	B064	B065	B066	L014	L015
1			49	38	29	150	18	19
2			9	2	2	58	10	14
3			60	104	14	12	19	
4			109	65	70	45	13	16
5			130	57	99	76	57	12
6			10	4	107	23	3	6
7			9	3	284	131	15	23
8			10	21	227	28	13	13
9			39	69	46	37	9	105
10		12	122	90	41	90	40	26
11		11	39	210	33	26	14	61
12		43	30	0	89	59	17	24
13		72	55	6	159	34	37	35
14		10	40	40	8	12	50	38
15		8	39	115	33	17	63	56
16		7	41	80	87	23	60	44
17			40	25	151	15		8
18			60	21	34	46		23
19			129	54	45	33		
20			13	175	41	20		
21			75	65	61	24		2
22			98	190	140	21		85
23			70	60	146	52		32
24			4	2	3	41		7
25			155	83	216	68		40
26			78	52	21	20		31
27			90	165	198	92		106
28			89	50	54	100		68
29			0	1	47	85		7
30			0	3	79	108		15

TABLE 8

BILLINGS SO_2 STUDY

MAXIMUM ONE HOUR CONCENTRATIONS

July, 1982

Parts per Billion -- SO_2

					Sites			
Day	B061	B062	B063	B064	B065	B066	L014	L015
1			139	75	85	40		44
2			90	50	9	19		41
3			50	76	40	54		88
4			68	40	52	25		48
5			25	24	108	28		14
6			30	9	222	30		1
7			174	247	144	159		108
8			169	20		22		14
9			27	45		21		25
10			43	85		8		70
11			41	325		31		26
12			70	25		26		22
13			89			71		203
14			13	0	15	51		34
15			13	11	200	34		7
16			9	12	187	195		2
17			104	215	90	80		81
18			42	80	141	42		118
19			129	145	35	89		105
20			80	266	96	22		115
21			68	46	287	169		49
22			62	85	74	72		24
23			49	85	19	82		38
24			3	10	102	58		22
25			9	5	110	49		10
26			55	107	76	50		49
27			0	8	4	139		8
28			140	25	21	227		15
29			183	170	96	80		52
30		8	43	170	40	21		34
31		25	49	54	29	24		133

TABLE 9

BILLINGS SO_2 STUDY

MAXIMUM ONE HOUR CONCENTRATIONS

August, 1982

Parts per Billion -- SO_2

Sites

Day	B061	B062	B063	B064	B065	B066	L014	L015
1		42	125	234	40	76		79
2		8	27	13	93	74		100
3			109	95	243	39		27
4			68	110	177	85		36
5			81	107	242	70		90
6			159	425	113	253		51
7			210	30	184	161		38
8			0	4	26	179		13
9			0	10	28	106		12
10		0	58	84	79	57		34
11		152	30	43	156	80		81
12		37	30	58	109	27		21
13		109	160	180	161	121		68
14		20	100	185	174	52		165
15		68	9	18	196	171		19
16		53	110	92	86	45		34
17		94	100	70	178	157		108
18		17	159	165	74	43		24
19		43	58	114	218	74		31
20		35	115	220	186	385		118
21		30	83	87	134	87		82
22		32	68	60	36	125		59
23		35	175	80	78	124		42
24			219	120	32	81		47
25			100	170	226	96		60
26		67	70	40	178	184		46
27		50	79	87	239	202		57
28		78	148	277	175	149		68
29		55	22	14	165	168		16
30		36	88	250	171	146		54
31		11	229	193	118	307		75

TABLE 10

BILLINGS SO_2 STUDY

MAXIMUM ONE HOUR CONCENTRATIONS

September, 1982

Parts per Billion -- SO_2

				Sites				
Day	B061	B062	B063	B064	B065	B066	L014	L015
1		42	74	72	95	145		16
2		15	112	204	90	230		29
3		29	209	250	104	157		17
4		54	133	210	324	65		54
5		23	39	10	155	255		39
6		71	125	136	248	275		96
7		24	129	186	101	85		32
8		26	140	260	119	335		97
9		19	101	225	116	275		44
10		48	35	73	96	170		53
11		7	70	55	37	55		14
12		74	30	97	59	105		13
13		59	8	11	0	40		20
14		19	8	3	2	117		7
15		37	45	26	29	48		14
16		30	62	143	107	113		76
17		25	91	150	102	132		147
18		38	59	130	56	166		101
19		61	0	10	65	24		27
20		108	335	50	160			30
21		108	239	340	162			88
22		8	81	80	167			77
23			130	230	141			49
24			190	716	152	120		142
25			40	42	132	145		56
26			30		110			13
27			0		170			0
28			37			42		
29			0			42		
30			21			23		

TABLE 11

BILLINGS SO_2 STUDY

MAXIMUM ONE HOUR CONCENTRATIONS

October, 1981

Parts per Billion -- SO_2

	Sites							
Day	B061	B062	B063	B064	B065	B066	L014	L015
1				148	34	173	69	135
2				200	51	152	50	43
3				4	47	49	10	16
4				5	144	37	12	16
5				35	48	65	32	39
6			74	259	67	94	58	84
7			63	64	85	275	28	40
8			70	86	109	49	9	16
9			53	120	79	91	38	26
10			45		221	196	16	24
11			30		45	89	10	14
12			25		12	27	6	7
13			31		40	49	6	22
14			136	242	258	181	74	81
15		18	234	156	172	217	31	61
16		230	194	373	219	147	33	59
17		10	26	16	113	172	23	6
18		29	184	247	217	410	30	111
19		58	114	179	142	239	18	131
20		50	0	6	52	44	2	8
21		40	65	106	65	116	100	12
22		64	153	377	229	188	20	42
23		68	154	182	157	195	30	154
24		45	203	57	222	72	42	60
25		19	109	108	202		8	79
26		30	200	135	186		17	85
27		17	100	258	93		19	31
28		76	146	236	313		19	43
29		15	36	74	115			12
30		13	53	80	27	32		60
31		27	70	315	65	219		167

TABLE 12

BILLINGS SO_2 STUDY

MAXIMUM ONE HOUR CONCENTRATIONS

November, 1981

Parts per Billion -- SO_2

Sites

Day	B061	B062	B063	B064	B065	B066	L014	L015
1		30	89	135	109	333		148
2		20	95	204	120	254		193
3		43	90	260	110	305		145
4		41	110	235	63	265		57
5		76	197	38	250	137		40
6		26	91	257	78	118		107
7		38	140	122	266	235		30
8		12	123	163	146	122		74
9		23	94	179	53	138		122
10		20	102	417	119	265	93	126
11		20	168	329	70	239	86	122
12		23	304	178	154	190	83	101
13		41	64	49	61	76	14	21
14		186	128	110	170	275	74	94
15		16	93	126	64	75	58	115
16		73	108	226	43	124	37	44
17		186	184	142	334	365	89	89
18		31	20	17	72	64	7	7
19		61	9	81	5	67	5	13
20		80	55	214	111	142	29	23
21		32	77	131	108	222	17	89
22		19	75	49	44	80	26	26
23		115	152	127	96	226	40	43
24		100	66	24	40	218	20	24
25		15	55	39	127	86	10	3
26		19	202	305	150	175	7	3
27		106	145	192	116	245	40	40
28		22	63	205	62	94	72	7
29		28	90	385	114	264	33	39
30		19	50	290	122	131	5	15

TABLE 13

BILLINGS SO_2 STUDY

MAXIMUM ONE HOUR CONCENTRATIONS

December, 1981

Parts per Billion -- SO_2

Sites

Day	B061	B062	B063	B064	B065	B066	L014	L015
1		18	123	145	64	74	7	60
2		24	94	78	43	105	17	33
3		21	29	148	41	94	27	55
4		60	90	123	90	118	50	104
5		29	173	72	51	108	68	122
6		18	124	44	80	131	77	153
7		19	210	226	89	77	88	30
8		63	156	105	186	259	58	55
9		56	237	227	69	210	40	44
10		88	50	130	55	203	47	63
11		14	45	51	81	33	9	10
12		58	183	370	270	220	54	28
13		69	6	8	4	134	32	25
14		26	67	45	68	122	19	54
15		122	35	26	12	116	31	16
16		101	70	194	78	128	86	46
17	7	15	81	143	97	131	18	83
18	20	28	74	222	72	61	50	79
19	22	50	65	192	78	261	37	59
20	46	75	47	65	44	123	16	12
21	10	20	67	92	38	194	9	13
22	5	10	43	75	114	94	8	7
23	11	8	255	45	104	79	12	89
24	15	10	120	58	96	89	28	88
25	18	15	187	108	104	109	20	38
26	5	10	50	61	29	78	9	17
27	25	15	134	179	132	104	33	31
28	170	135	5	6	4	276	64	64
29	95	175	45	45	178	350	85	51
30	135	185	76	151	99	274	133	121
31	43	270	116	94	103	214	64	44

TABLE 14

BILLINGS SO_2 STUDY

TWENTY-FOUR HOUR CONCENTRATIONS

January, 1982

Parts per Billion -- SO_2

				Sites				
Day	B061	B062	B063	B064	B065	B066	L014	L015
1	8	28	41	37	33	60	17	13
2	3	38	13	7	11	102	22	16
3	11	11	40	48	42	87	18	11
4	9	42	26	17	24	59	6	11
5	0	23	13	8	3	50		13
6	4	14	59	75	93	64		22
7	2	4	69	23	83	91		35
8	1	16	56	16	30	104		24
9	0	37	6	0	0	12		22
10	4	40	9	0	4	48		21
11	6	38	8	0	10	28		19
12	1	9	37	45	20	32		11
13	3	16	33	23	26	33		21
14	1	10	39	13	15	28		14
15	1	13	9	1	5	6		7
16	1	7	22	21	15	39		55
17	1	7	22	26	28	34		13
18	9	15	34	94	45	42		17
19	2	40	9	2	2	38	21	22
20	2	25	9	1	5	20	20	17
21	2	26	10	2	5	49	7	6
22	4	20	10	4	13	34	17	14
23	4	38	8	4	4	92	36	30
24	14	25	18	14	33	39	15	16
25	27	26	48	50	46	79	13	26
26	11	12	28	26	23	62	14	25
27	1	4		2	8	14	5	
28	24	41		39	40	80	27	14
29	6	9		50	63	61	6	3
30	17	57		16	21	88	22	
31	10	13		10	55	42	9	

TABLE 15

BILLINGS SO_2 STUDY

TWENTY-FOUR HOUR CONCENTRATIONS

February, 1982

Parts per Billion -- SO_2

	Sites							
Day	B061	B062	B063	B064	B065	B066	L014	L015
1	5	10		12	27	17	5	3
2	5	43		0	0	5	18	14
3	15	8	30	51	15	28	17	14
4	6	9	49	81	60	46	10	18
5	5	8	49	27	57	28	11	53
6	4	5	80	15	45	22	10	27
7	3	8	19	3	12	13	7	1
8	0	8	15	5	28	44	8	0
9	7	8	65	101	73	58	14	5
10	6	8	58	62	64	70	11	21
11	6	10	55	62	42	45	14	9
12	9	15	49	100	47	97	20	22
13	8	10	52	87	60	65	15	31
14	8	8	31	50	40	56	9	17
15	11	8	28	27	41	59	9	13
16	15	20	29	22	23	61	9	9
17	4	5	38	28	23	59	7	8
18	6	4	39	37	34		5	6
19	2	4	52	13	18	35	13	13
20	6	5	57	46	51	76	8	17
21	6	17	32	40	30	68	8	16
22	2	35	5	3	11	13	9	15
23	2	5	7	2	16	18	5	8
24	3	10	30	9	19	18	6	7
25	12	24	47	31	32	46	7	15
26	9	18	57	33	24	49	13	8
27	7	12	37	34	23	19	12	9
28	9	9	32	25	26	31	7	10

TABLE 16

BILLINGS SO_2 STUDY

TWENTY-FOUR HOUR CONCENTRATIONS

March, 1982

Parts per Billion -- SO_2

Sites

Day	B061	B062	B063	B064	B065	B066	L014	L015
1	19	38	16	8	13	57	13	7
2	8	31	11	2	3	16	13	12
3	39	65	24	10	15	68	27	25
4	6	43	9		2	2	16	14
5	6	12	47	22	30	20	9	8
6	3	6	6	2	7	12	4	1
7	4	7	22	14	30	17	5	2
8	6	17	7	3	2	14	3	1
9	6	6	44	40	46	39	13	8
10	6	6	27	8	45	43	6	2
11	10	4	23	40	13	27	7	6
12	1	1		3	8	13	4	1
13	4	3		22	23	37	6	8
14	11	21		56	51	38	18	2
15	7	21		4	24	31	4	1
16	2	17		3	3	12	4	2
17	2	16		0	0	29	2	1
18	7	19		0	0	20	1	2
19	0	0		0	69	7	2	0
20	1	2		2	12	5	4	1
21	5	7		45	26	15	6	12
22	5	3		55	27	24	5	11
23	1	4	5	18	19	18	3	1
24	2	5	7	1	3	9	3	1
25	14	41	22	17	20	17	5	0
26	8	32	26	7	20	97	11	7
27	5	7	20	27	16	13	5	8
28	4	18	10	0	24	22	4	0
29	3	5	13	6	14	27	4	0
30	0	2	21	2	7	22	8	4
31	9	26	11	6	7	62	5	1

TABLE 17

BILLINGS SO_2 STUDY

TWENTY-FOUR HOUR CONCENTRATIONS

April, 1982

Parts per Billion -- SO_2

				Sites				
Day	B061	B062	B063	B064	B065	B066	L014	L015
1	3	18	8	3	18	23	6	4
2	0	6	5	0	71	0	3	1
3	4	22	5	0	0	10	5	4
4	0	5	8	0	16	9	3	1
5	15	6	11	22	2	7	9	7
6	4	33	24	20	26	41	7	6
7	0	1	7	0	53	4	3	1
8	1	2	16	18	7	22	8	5
9	0	1	9	1		13	4	4
10	1	3	34	22		22	10	24
11	3	2	29	25		12	8	14
12	2	2	17	9	4	6	4	6
13		3	22	16	9	5	5	9
14		2	26	12	4	4	8	10
15		1	18	3	5	5	4	7
16		2	19	4	5	15	5	5
17		2	19	15	20	7	5	5
18		0	11		20	2	5	2
19		1	19	2	109	3	5	1
20		1	16	9	6	7	5	8
21		4	15	25	17	6	9	14
22		2	22	22	10	10	25	11
23		2	20	28	19	7	6	11
24		24	37	42	59	50	7	5
25		22	7	0	0	9	4	5
26		13	6	1	7	24	6	6
27		3	11	11	5	4	6	6
28		15	19	9	10	23	5	6
29		0	10	1	13	9	5	2
30		4	31	15	18	10	12	11

TABLE 18

BILLINGS SO_2 STUDY

TWENTY-FOUR HOUR CONCENTRATIONS

May, 1982

Parts per Billion -- SO_2

				Sites				
Day	B061	B062	B063	B064	B065	B066	L014	L015
1		1	17	24	10	6	6	
2		1	15	12	14	8	6	
3		7	17	18	30	15	7	5
4		0	10	3	12	11	5	0
5		0	16	11	3	4	6	2
6		0	11	6	2	6	5	1
7		1	11	2	7	3	8	4
8		7	11	3	9	11	4	1
9		1	9	0	27	3	4	0
10		4	9	0	18	6	4	1
11		4	10	1	6	6	4	1
12		0	19	18	3	4	7	5
13		2	10	4	14	7	6	2
14		5	14	12	9	5	6	2
15		0	17	12	7	4	6	2
16		5	6	1	10	4	4	1
17		3	13	7	9	5	5	5
18		31	7	2	41	20	7	5
19		6	7	3	10	6	3	1
20		8	6	6	23	4	5	2
21		8	22	1	16	10	5	16
22		22	24	20	24	22	15	14
23		19	10	2	9		2	2
24		12	18	17	24	1	4	14
25		3	17	12	15	14	5	11
26			10	6	10	9	1	1
27			8	0	9	4	3	3
28			13	0	13	2	1	1
29			29	2	5	4	0	1
30			8	0	44	4	3	1
31			18	35	8	2	7	6

TABLE 19

BILLINGS SO_2 STUDY

TWENTY-FOUR HOUR CONCENTRATIONS

June, 1982

Parts per Billion -- SO_2

Sites

Day	B061	B062	B063	B064	B065	B066	L014	L015
1			12	4	5	34	3	3
2			7	1	1	12	2	3
3			18	15	2	3	4	
4			24	18	10	8	5	5
5			21	9	16	11	5	2
6			8	1	18	5	1	1
7			5	1	61	27	3	5
8			2	4	52	2	3	3
9			12	14	12	8	2	18
10		6	26	13	7	19	7	6
11		2	6	26	4	3	3	8
12		13	6	0	16	16	3	3
13		10	9	1	20	7	6	4
14		3	16	15	2	4	9	5
15		3	13	24	7	5	12	14
16		4	16	15	14	6	23	7
17			13	7	13	3		2
18			15	7	9	12		5
19			18	10	7	7		
20			7	27	6	3		
21			22	17	12	8		1
22			16	30	14	7		22
23			19	16	36	13		3
24			2	1	0	6		2
25			30	17	41	15		10
26			16	12	4	4		6
27			14	16	30	23		10
28			10	9	8	17		10
29			0	0	5	16		4
30			0	1	10	32		6

TABLE 20

BILLINGS SO_2 STUDY

TWENTY-FOUR HOUR CONCENTRATIONS

July, 1982

Parts per Billion -- SO_2

					Sites			
Day	B061	B062	B063	B064	B065	B066	L014	L015
1			16	18	10	11		10
2			12	13	1	5		6
3			10	15	12	18		7
4			7	6	10	5		5
5			9	6	10	6		1
6			2	1	22	3		0
7			23	28	33	26		8
8			18	3		7		1
9			5	4		5		4
10			6	14		2		7
11			8	51		5		5
12			11	13		4		2
13			19			12		19
14			3	0	6	6		6
15			1	1	23	4		1
16			2	1	81	16		0
17			16	36	16	16		17
18			9	16	28	12		11
19			19	20	9	12		11
20			18	33	21	9		22
21			10	10	46	50		9
22			11	17	18	21		7
23			8	11	7	12		7
24			0	3	13	9		4
25			0	2	14	7		3
26			5	11	9	15		12
27			0	3	1	18		4
28			9	5	6	37		6
29			21	28	22	21		13
30		4	6	25	9	6		7
31		5	10	18	7	9		15

TABLE 21

BILLINGS SO_2 STUDY

TWENTY-FOUR HOUR CONCENTRATIONS

August, 1982

Parts per Billion -- SO_2

Sites

Day	B061	B062	B063	B064	B065	B066	L014	L015
1		10	13	38	8	15		20
2		4	2	4	14	11		10
3			12	19	53	10		8
4			9	11	29	21		9
5			13	18	57	21		12
6			19	39	22	30		11
7			13	7	11	35		8
8			0	3	2	65		7
9			0	7	2	37		7
10		0	4	13	6	6		9
11		32	4	13	26	22		19
12		5	4	11	16	5		7
13		19	20	43	27	37		12
14		6	16	39	33	16		19
15		16	1	7	36	35		4
16		13	12	18	18	14		8
17		13	13	14	25	42		13
18		5	18	47	18	16		6
19		13	6	29	29	25		3
20		13	23	45	40	59		15
21		7	12	18	20	16		11
22		10	7	18	9	28		7
23		10	26	13	17	35		6
24			25	26	8	26		10
25			28	29	30	31		12
26		30	4	6	9	35		4
27		15	11	18	23	32		10
28		22	24	51	50	61		10
29		14	3	4	26	23		3
30		8	14	26	23	31		7
31		5	21	18	31	37		8

TABLE 22

BILLINGS SO_2 STUDY

TWENTY-FOUR HOUR CONCENTRATIONS

September, 1982

Parts per Billion -- SO_2

Sites

Day	B061	B062	B063	B064	B065	B066	L014	L015
1		8	13	9	24	23		2
2		5	17	45	20	31		5
3		8	23	25	20	29		4
4		15	19	26	34	12		8
5		7	2	2	23	21		3
6		25	12	13	47	61		13
7		8	23	42	26	19		8
8		8	37	49	35	66		10
9		6	26	37	24	48		10
10		12	12	17	24	27		6
11		2	18	14	8	8		2
12		12	8	9	8	19		3
13		27	5	5	0	6		7
14		6	5	1	0	22		1
15		10	8	7	6	12		2
16		9	23	46	28	31		15
17		6	22	35	19	32		36
18		15	17	42	34	61		16
19		19	0	2	7	16		9
20		26	30	9	32			7
21		15	35	51	26			20
22		6	16	12	27			13
23			27	35	30			13
24			30	61	25	26		18
25			8	5	29	22		9
26			5		24			5
27			0		68			0
28			6			7		
29			0			3		
30			5			3		

TABLE 23

BILLINGS SO_2 STUDY

TWENTY-FOUR HOUR CONCENTRATIONS

October, 1981

Parts per Billion -- SO_2

Sites

Day	B061	B062	B063	B064	B065	B066	L014	L015
1				23	8	46	14	31
2				32	16	36	7	7
3				4	7	8	1	4
4				4	17	5	1	6
5				10	7	13	5	11
6			27	43	11	18	8	14
7			17	17	22	47	7	14
8			11	16	18	6	1	4
9			14	36	14	16	7	7
10			12		32	39	4	8
11			6		15	14	3	6
12			6		1	4	2	5
13			8		7	11	3	9
14			24	59	25	37	9	16
15		11	35	30	41	47	5	10
16		23	51	96	68	52	3	9
17		5	5	7	16	26	2	4
18		11	61	53	83	95	8	27
19		23	34	43	44	48	4	45
20		12	0	4	8	9	0	4
21		14	8	27	20	37	20	4
22		26	37	67	54	51	5	9
23		15	38	38	28	54	8	26
24		13	63	21	82	72	5	14
25		8	35	40	66		2	28
26		12	55	36	53		3	31
27		9	34	62	32		6	9
28		8	21	66	42		9	9
29		4	6	14	19			3
30		1	11	7	5	13		12
31		3	30	54	30	75		58

TABLE 24

BILLINGS SO_2 STUDY

TWENTY-FOUR HOUR CONCENTRATIONS

November, 1981

Parts per Billion -- SO_2

				Sites				
Day	B061	B062	B063	B064	B065	B066	L014	L015
1		15	54	55	55	71		50
2		7	39	74	44	105		34
3		9	34	55	41	132		31
4		8	29	44	15	55		9
5		8	20	13	27	20		7
6		6	29	51	18	35		27
7		6	34	37	53	52		7
8		3	24	34	18	31		17
9		8	47	42	34	65		28
10		5	32	79	40	81	19	28
11		5	52	81	35	85	23	18
12		8	42	53	44	71	18	21
13		15	17	16	15	32	5	8
14		20	25	13	34	42	7	9
15		8	37	22	16	30	10	21
16		23	26	35	19	32	8	13
17		39	43	31	57	81	18	23
18		5	6	4	12	14	1	4
19		12	5	6	0	14	1	6
20		26	28	46	28	59	7	10
21		14	41	68	42	86	4	18
22		6	20	13	11	20	2	5
23		27	35	27	30	60	10	15
24		18	17	8	7	57	3	4
25		6	10	7	20	16	1	1
26		9	65	110	54	55	1	0
27		25	39	48	39	71	8	6
28		9	22	55	17	49	13	2
29		13	37	72	40	81	10	7
30		7	13	38	18	26	2	3

TABLE 25

BILLINGS SO_2 STUDY

TWENTY-FOUR HOUR CONCENTRATIONS

December, 1981

Parts per Billion -- SO_2

Sites

Day	B061	B062	B063	B064	B065	B066	L014	L015
1		6	27	27	16	19	1	18
2		6	23	23	6	24	3	7
3		5	8	11	7	9	4	11
4		21	39	42	29	51	15	25
5		13	32	27	16	48	9	17
6		7	38	19	22	30	16	18
7		8	38	54	22	27	9	6
8		12	29	34	25	48	8	11
9		18	41	70	26	62	11	11
10		20	17	23	22	41	11	12
11		4	11	11	13	8	4	5
12		12	45	61	48	76	13	10
13		7	3	6	0	12	7	8
14		9	17	12	17	25	5	11
15		12	5	7	2	29	8	6
16		14	13	24	13	36	16	16
17	6	8	53	75	58	58	10	24
18	10	14	43	103	37	29	15	16
19	11	14	32	77	36	102	16	20
20	16	20	18	26	20	40	4	7
21	3	7	19	16	10	42	4	8
22	3	2	15	19	20	32	4	5
23	4	2	62	23	39	44	5	24
24	4	3	42	26	51	43	7	32
25	5	4	34	31	36	44	6	7
26	1	3	17	18	12	34	4	5
27	4	3	31	43	25	45	6	7
28	12	23	4	5	0	43	21	24
29	23	42	15	15	23	119	22	19
30	27	51	38	49	48	84	32	28
31	12	95	32	25	34	72	13	15

TABLE 26

Billings SO_2 Study
Monthly Summary

Monthly Averages - SO_2 - Parts per Billion

Sites

	B061	B062	B063	B064	B065	B066	L014	L015
JAN 1982	6	23	26	21	26	52	16	19
FEB 1982	6	12	41	36	34	43	10	14
MAR 1982	7	16	19	14	19	24	7	5
APR 1982	3	6	17	12	20	13	6	7
MAY 1982	--	6	13	8	14	7	5	4
JUN 1982	--	6	13	11	15	11	5	6
JUL 1982	--	5	9	14	17	12	--	7
AUG 1982	--	12	12	21	24	28	--	10
SEP 1982	--	12	15	25	23	26	--	9
OCT 1981	--	12	25	33	29	33	5	14
NOV 1981	--	12	31	41	29	54	8	14
DEC 1981	9	15	27	32	24	45	10	14

Number of Hours

Sites

	B061	B062	B063	B064	B065	B066	L014	L015
JAN 1982	733	730	605	728	733	728	403	626
FEB 1982	664	661	584	643	663	601	665	645
MAR 1982	735	734	454	669	724	630	737	731
APR 1982	275	695	714	655	593	634	716	690
MAY 1982	--	572	716	730	733	649	733	680
JUN 1982	--	132	711	700	696	707	362	605
JUL 1982	--	33	736	683	563	733	--	732
AUG 1982	--	473	737	722	716	734	--	728
SEP 1982	--	505	709	549	601	528	--	624
OCT 1981	--	388	608	624	731	575	655	730
NOV 1981	--	714	710	705	704	713	489	711
DEC 1981	339	735	733	739	727	720	732	738

TABLE 27

BILLINGS SO_2 STUDY

ANNUAL CONCENTRATIONS
October 1, 1981 - September 30, 1982

Parts Per Billion - SO_2

Site	Annual Average	Number of Hours
B061	6.3	2746
B062	12.7	6372
B063	20.2	8017
B064	22.1	8147
B065	22.9	8184
B066	29.2	7952
L014	7.7	5492
L015	10.2	8240

TABLE 28

BILLINGS INDUSTRIES
EMISSION AND STACK DATA
ENGLISH UNITS

SOURCE	EAST COORD	NORTH COORD	SO2 (LB/HR) EMISSIONS	STACK HT (FT)	STACK TEMP (F)	STACK DIAM (FT)	STACK VEL (FT/SEC)	GRD-LVL ELEV (FT)
MPCO-COR	695.9	5071.9	2500	350	270	11.50	109.9	3110
CON-B.P.	695.0	5072.5	515	270	312	9.50	21.6	3110
CON-FCC	695.0	5072.5	318	176	510	3.00	157.8	3110
GT WEST	694.8	5071.2	326	120	141	11.75	30.9	3120
EXX - CAT	699.5	5076.4	940	208	394	9.67	25.7	3100
EXX - COKE	699.5	5076.4	456	210	491	8.08	22.5	3100
EXX - F-2	699.5	5076.4	698	210	512	6.71	41.1	3100
EXX - F-3	699.5	5076.4	62	136	858	4.50	22.1	3100
EXX - F-3X	699.5	5076.4	37	130	678	4.00	14.5	3100
EXX - F-5	699.5	5076.4	--	--	--	--	--	3100
EXX - F-651	699.5	5076.4	--	--	--	--	--	3100
EXX - F-700	699.5	5076.4	52	208	393	9.04	9.2	3100
MT SULF	699.8	5076.3	557	100	650	3.50	28.9	3100
CEN - #3	673.9	5058.5	366	199	565	4.30	41.5	3280
CEN - #4	673.9	5058.5	353	199	593	4.30	40.9	3280
CEN - #5	673.9	5058.5	353	199	525	4.30	38.3	3280
CEN - CR-MN	673.9	5058.5	119	199	410	7.70	13.5	3280
CEN - CR-PR	673.9	5058.5	41	87	837	5.80	20.3	3280
CEN - AL-HT	673.9	5058.5	37	100	786	6.50	21.4	3280
CEN - SUL-P	674.1	5058.2	238	199	1000	2.66	24.8	3280
CEN - FCC	673.9	5058.5	600	199	535	6.70	45.6	3280

TABLE 29

BILLINGS INDUSTRIES
EMISSION AND STACK DATA
METRIC UNITS

SOURCE	EAST COORD	NORTH COORD	SO2 (G/SEC) EMISSIONS	STACK HT (M)	STACK TEMP (K)	STACK DIAM (M)	STACK VEL (M/SEC)	GRD-LVL ELEV (FT)
MPCO-COR	695.9	5071.9	315.0	106.7	405	3.51	33.50	3110
CON-B.P.	695.0	5072.5	64.9	82.3	428	2.90	6.60	3110
CON-FCC	695.0	5072.5	40.0	53.6	538	0.91	48.12	3110
GT WEST	694.8	5071.2	41.1	36.5	333	3.58	9.42	3120
EXX - CAT	699.5	5076.4	118.4	63.4	474	2.95	7.85	3100
EXX - COKE	699.5	5076.4	57.4	64.0	528	2.46	6.86	3100
EXX - F-2	699.5	5076.4	87.9	64.0	539	2.05	12.54	3100
EXX - F-3	699.5	5076.4	7.8	41.4	731	1.37	6.74	3100
EXX - F-3X	699.5	5076.4	4.6	39.6	631	1.22	4.43	3100
EXX - F-5	699.5	5076.4	--	--	--	--	--	3100
EXX - F-651	699.5	5076.4	--	--	--	--	--	3100
EXX - F-700	699.5	5076.4	6.5	63.4	473	2.76	2.82	3100
MT SULF	699.8	5076.3	72.7	30.5	616	1.07	8.82	3100
CEN - #3	673.9	5058.5	46.1	60.8	569	1.31	12.66	3280
CEN - #4	673.9	5058.5	44.5	60.8	569	1.31	12.48	3280
CEN - #5	673.9	5058.5	44.5	60.8	546	1.31	11.68	3280
CEN - CR-MN	673.9	5058.5	15.0	60.8	483	2.35	4.13	3280
CEN - CR-PR	673.9	5058.5	5.1	26.5	720	1.77	6.21	3280
CEN - AL-HT	673.9	5058.5	4.7	30.5	691	1.98	6.53	3280
CEN - SUL-P	674.1	5058.2	30.0	60.8	810	0.81	7.58	3280
CEN - FCC	673.9	5058.5	75.6	60.7	552	2.04	13.90	3280

TABLE 30

BILLINGS INDUSTRIES -- OPERATION SCHEDULE

JANUARY, 1982

DAYS

INDUSTRIES	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
MPCO-COR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CON - B.P.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CON - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
GT WEST	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - CAT	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
EXX - COKE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - F-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - F-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-3X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-651	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-700	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
MT SULF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #3	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	29
CEN - #4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - CR-MN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - CR-PR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - AL-HT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - SUL-P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31

TABLE 31

BILLINGS INDUSTRIES -- OPERATION SCHEDULE

FEBRUARY, 1982

DAYS

INDUSTRIES	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
MPCO-COR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0				26
CON - B.P.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
CON - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
GT WEST	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0				23
EXX - CAT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
EXX - COKE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
EXX - F-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
EXX - F-3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
EXX - F-3X	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
EXX - F-5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
EXX - F-651	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
EXX - F-700	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
MT SULF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
CEN - #3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
CEN - #4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
CEN - #5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
CEN - CR-MN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
CEN - CR-PR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
CEN - AL-HT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
CEN - SUL-P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28
CEN - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				28

Table 31

TABLE 32

BILLINGS INDUSTRIES -- OPERATION SCHEDULE

MARCH, 1982

DAYS

INDUSTRIES	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
MPCO-COR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CON - B.P.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CON - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
GT WEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - CAT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - COKE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	20
EXX - F-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - F-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-3X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - F-651	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - F-700	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
MT SULF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - CR-MN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - CR-PR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - AL-HT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - SUL-P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31

TABLE 33

BILLINGS INDUSTRIES -- OPERATION SCHEDULE

APRIL, 1982

	DAYS																														
INDUSTRIES	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
MPCO-COR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
CON - B.P.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CON - FCC	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1		24
GT WEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
EXX - CAT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0		21
EXX - COKE	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		24
EXX - F-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
EXX - F-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
EXX - F-3X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
EXX - F-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
EXX - F-651	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
EXX - F-700	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
MT SULF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - #3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - #4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0		23
CEN - #5	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		25
CEN - CR-MN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - CR-PR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - AL-HT	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		4
CEN - SUL-P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1		25
CEN - FCC	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		4

TABLE 34

BILLINGS INDUSTRIES -- OPERATION SCHEDULE

MAY, 1982

INDUSTRIES	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
	DAYS																															
MPCO-COR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CON - B.P.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CON - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
GT WEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - CAT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3
EXX - COKE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - F-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - F-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-3X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-651	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-700	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
MT SULF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #3	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24
CEN - #4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #5	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25
CEN - CR-MN	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25
CEN - CR-PR	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25
CEN - AL-HT	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25
CEN - SUL-P	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25
CEN - FCC	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25

TABLE 35

BILLINGS INDUSTRIES -- OPERATION SCHEDULE

JUNE, 1982

DAYS

INDUSTRIES	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
MPCO-COR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
CON - B.P.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CON - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
GT WEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
EXX - CAT	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		19
EXX - COKE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
EXX - F-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
EXX - F-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
EXX - F-3X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
EXX - F-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
EXX - F-651	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
EXX - F-700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
MT SULF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - #3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - #4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - #5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - CR-MN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - CR-PR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - AL-HT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - SUL-P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30

TABLE 36

BILLINGS INDUSTRIES -- OPERATION SCHEDULE

JULY, 1982

DAYS

INDUSTRIES	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
MPCO-COR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3
CON - B.P.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CON - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
GT WEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - CAT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - COKE	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	20
EXX - F-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - F-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-3X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-651	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MT SULF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - CR-MN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - CR-PR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - AL-HT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - SUL-P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31

TABLE 37

BILLINGS INDUSTRIES -- OPERATION SCHEDULE

AUGUST, 1982

DAYS

INDUSTRIES	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
MPCO-COR	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	1	0	0	0	0	9
CON - B.P.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CON - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
GT WEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - CAT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - COKE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - F-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - F-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-3X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-651	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MT SULF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - CR-MN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - CR-PR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - AL-HT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - SUL-P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - FCC	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30

Table 37

TABLE 38

BILLINGS INDUSTRIES -- OPERATION SCHEDULE

SEPTEMBER, 1982

DAYS

INDUSTRIES	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
MPCO-COR	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		27
CON - B.P.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CON - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
GT WEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
EXX - CAT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
EXX - COKE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
EXX - F-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
EXX - F-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
EXX - F-3X	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		10
EXX - F-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
EXX - F-651	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
EXX - F-700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
MT SULF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - #3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - #4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - #5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - CR-MN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - CR-PR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - AL-HT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - SUL-P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		30
CEN - FCC	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1		29

Table 38

TABLE 39

BILLINGS INDUSTRIES -- OPERATION SCHEDULE

OCTOBER, 1981

DAYS

INDUSTRIES	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
MPCO-COR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CON - B.P.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CON - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
GT WEST	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29
EXX - CAT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - COKE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - F-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
EXX - F-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
EXX - F-3X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
EXX - F-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14
EXX - F-651	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-700	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
MT SULF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - CR-MN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - CR-PR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - AL-HT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - SUL-P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31

TABLE 40

BILLINGS INDUSTRIES -- OPERATION SCHEDULE

NOVEMBER, 1981

INDUSTRIES	DAYS 01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	TOTAL
MPCO-COR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
CON - B.P.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
CON - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
GT WEST	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
EXX - CAT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
EXX - COKE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
EXX - F-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
EXX - F-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-3X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-651	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-700	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
MT SULF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
CEN - #3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
CEN - #4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
CEN - #5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
CEN - CR-MN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
CEN - CR-PR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
CEN - AL-HT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
CEN - SUL-P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30
CEN - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	30

TABLE 41

BILLINGS INDUSTRIES -- OPERATION SCHEDULE

DECEMBER, 1981

DAYS

INDUSTRIES	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
MPCO-COR	1	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	25
CON - B.P.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CON - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
GT WEST	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - CAT	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	16
EXX - COKE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - F-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
EXX - F-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-3X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-651	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-700	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
MT SULF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - #5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - CR-MN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - CR-PR	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - AL-HT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - SUL-P	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	31
CEN - FCC	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	29

TABLE 42

BILLINGS INDUSTRIES -- OPERATION SCHEDULE

OCTOBER, 1981 - SEPTEMBER, 1982

DAYS

INDUSTRIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MPCO-COR	31	26	0	0	0	0	3	9	27	31	30	25	182
CON - B.P.	31	28	31	30	31	30	31	31	30	31	30	31	365
CON - FCC	31	28	31	24	31	30	31	31	30	31	30	31	359
GT WEST	31	23	0	0	0	0	0	0	0	29	30	31	144
EXX - CAT	31	28	31	21	3	19	31	31	30	31	30	16	294
EXX - COKE	31	28	20	24	31	30	20	31	30	31	30	31	337
EXX - F-2	31	28	31	30	31	30	31	31	30	14	30	31	348
EXX - F-3	0	28	0	0	0	0	0	0	0	14	0	0	42
EXX - F-3X	0	28	0	0	0	0	0	0	10	14	0	0	42
EXX - F-5	0	28	31	0	0	0	0	0	0	14	0	0	73
EXX - F-651	0	28	31	0	0	0	0	0	0	0	0	0	59
EXX - F-700	31	28	31	30	31	0	0	0	0	31	30	31	243
MT SULF	31	28	31	30	31	30	31	31	30	31	30	31	365
CEN - #3	29	28	31	30	24	30	31	31	30	31	30	31	356
CEN - #4	31	28	31	23	31	30	31	31	30	31	30	31	358
CEN - #5	31	28	31	25	25	30	31	31	30	31	30	31	354
CEN - CR-MN	31	28	31	30	25	30	31	31	30	31	30	31	359
CEN - CR-PR	31	28	31	30	25	30	31	31	30	31	30	31	359
CEN - AL-HT	31	28	31	4	25	30	31	31	30	31	30	31	333
CEN - SUL-P	31	28	31	25	25	30	31	31	30	31	30	31	354
CEN - FCC	31	28	31	4	25	30	31	30	29	31	30	29	329

TABLE 43

Billings SO_2 Study
Monthly Summary

Monthly Averages - Wind Speed - m/sec x 10

	Sites							
	B061	B062	B063	B064	B065	B066	L014	L015
JAN 1982	20	30	26	28	27	36	39	45
FEB 1982	18	25	27	32	29	37	38	34
MAR 1982	17	23	25	29	24	35	36	37
APR 1982	20	28	33	38	32	41	40	41
MAY 1982	19	25	30	31	29	40	35	42
JUN 1982	16	21	21	22	20	30	27	27
JUL 1982	15	20	21	24	21	28	--	28
AUG 1982	19	21	22	--	21	29	--	26
SEP 1982	14	19	20	--	18	30	--	24
OCT 1981	14	20	13	26	22	33	29	33
NOV 1981	15	20	21	25	22	35	30	35
DEC 1981	17	24	23	27	25	36	31	38

Number of Hours

	Sites							
	B061	B062	B063	B064	B065	B066	L014	L015
JAN 1982	730	656	663	737	613	748	408	649
FEB 1982	667	272	612	551	569	602	670	672
MAR 1982	744	444	578	611	341	672	708	702
APR 1982	720	720	708	381	677	655	720	680
MAY 1982	238	743	728	730	730	589	742	743
JUN 1982	216	720	720	439	413	501	83	719
JUL 1982	743	744	671	316	639	579	--	544
AUG 1982	741	739	742	--	742	593	--	715
SEP 1982	720	720	720	--	449	533	--	593
OCT 1981	602	742	231	631	742	744	658	711
NOV 1981	720	720	720	541	680	715	493	718
DEC 1981	672	371	692	715	668	744	740	644

TABLE 44

SO_2 - MEANS AND CORRELATIONS BETWEEN SITES

JANUARY, 1982

SITE		MEAN N	B062	B063	B064	B065	B066	L014	L015
B061	R	---	.367	.167	.220	.254	.192	.126	.098
	$\overline{M}$	6.1	6.0/23.0	5.0/26.0	6.0/20.0	6.0/25.7	6.1/52.3	9.2/16.2	5.4/19.0
	PR	733	719	596	717	722	719	398	615
B062	R	---		-.156	-.080	-.086	.230	.359	.096
	$\overline{M}$	22.8		22.9/24.8	23.0/20.2	22.9/25.7	22.8/51.2	26.5/16.2	22.6/18.9
	PR	730		591	714	724	714	401	612
B063	R	---			.337	.634	.266	-.052	.088
	$\overline{M}$	26.1			25.7/20.6	26.1/51.9	20.6/24.9	21.7/17.5	26.2/19.3
	PR	605			593	597	591	269	599
B064	R	---				.469	.222	.023	.038
	$\overline{M}$	21.0				20.6/24.9	19.9/52.2	19.3/16.3	21.3/19.0
	PR	728				719	712	398	614
B065	R	---					.174	-.024	.156
	$\overline{M}$	25.8					25.9/52.1	25.1/16.3	24.5/19.0
	PR	733					717	399	618
B066	R	---						.255	.099
	$\overline{M}$	52.2						58.9/16.1	52.0/19.1
	PR	782						394	612
L014	R	---							.541
	$\overline{M}$	16.2							17.2/16.6
	PR	403							291
L015	R	---							
	$\overline{M}$	19.0							
	PR	626							

TABLE 45

SO_2 - MEANS AND CORRELATIONS BETWEEN SITES

MAY, 1982

SITE		MEAN N	B062	B063	B064	B065	B066	L014	L015
B061	R	---							
	$\overline{M}$								
	PR								
B062	R	---		.000	.000	.264	.235	.039	.111
	$\overline{M}$	6.1		6.3/13.0	6.2/8.7	6.1/13.7	5.2/7.1	6.2/5.6	6.6/3.8
	PR	572		546	563	561	486	565	509
B063	R	---			.541	.166	.358	.472	.535
	$\overline{M}$	13.4			13.4/8.6	13.2/14.5	13.6/6.5	13.4/4.9	13.0/3.7
	PR	716			704	707	638	705	652
B064	R	---				.153	.298	.506	.521
	$\overline{M}$	8.4				8.2/14.3	8.7/6.7	8.5/5.0	7.4/3.7
	PR	730				721	637	720	666
B065	R	---					.165	.152	.213
	$\overline{M}$	14.3					14.5/6.6	14.4/4.9	14.4/3.5
	PR	733					641	722	669
B066	R	---						.360	.373
	$\overline{M}$	6.6						6.7/5.0	6.1/3.4
	PR	649						641	589
L014	R	---							.571
	$\overline{M}$	4.9							4.8/3.7
	PR	733							670
L015	R	---							
	$\overline{M}$	3.6							
	PR	680							

TABLE 46

SO_2 - MEANS AND CORRELATIONS BETWEEN SITES

AUGUST, 1982

SITE		MEAN N	B062	B063	B064	B065	B066	L014	L015
B061	R	---							
	$\overline{M}$								
	PR								
B062	R	---		-.016	.001	.112	.304		.034
	$\overline{M}$	12.4		12.4/12.6	12.3/23.6	12.3/23.7	12.4/28.0		12.4/9.9
	PR	473		467	453	448	467		468
B063	R	---			.620	.211	.245		.413
	$\overline{M}$	12.1			11.5/20.8	12.0/23.1	11.2/28.3		11.6/9.5
	PR	737			717	709	727		721
B064	R	---				.226	.158		.389
	$\overline{M}$	20.9				19.7/22.6	20.1/28.1		20.1/9.2
	PR	722				694	712		706
B065	R	---					.012		.158
	$\overline{M}$	23.5					23.2/28.5		22.4/9.3
	PR	716					706		701
B066	R	---							.026
	$\overline{M}$	28.2							28.4/9.2
	PR	734							718
L014	R	---							
	$\overline{M}$								
	PR								
L015	R	---							
	$\overline{M}$	9.5							
	PR	728							

TABLE 47

SO_2 - MEANS AND CORRELATIONS BETWEEN SITES

NOVEMBER, 1981

SITE		MEAN N	B062	B063	B064	B065	B066	L014	L015
B061	R $\overline{M}$ PR	---							
B062	R $\overline{M}$ PR	--- 12.3 714		.112 12.3/30.6 704	.094 12.5/40.8 699	.298 12.3/29.4 698	.326 12.4/54.4 707	.413 14.5/7.9 484	.190 12.1/14.3 706
B063	R $\overline{M}$ PR	--- 30.6 710			.507 30.8/41.1 699	.481 30.8/29.5 697	.302 30.5/54.3 703	.214 27.8/8.0 480	.239 30.3/14.5 703
B064	R $\overline{M}$ PR	--- 40.9 705				.485 40.5/29.6 691	.386 41.2/54.7 698	.274 37.5/8.1 476	.216 40.6/14.4 697
B065	R $\overline{M}$ PR	--- 29.5 704					.415 29.7/54.4 697	.386 26.4/7.9 476	.217 29.3/14.3 695
B066	R $\overline{M}$ PR	--- 54.4 713						.398 49.4/8.0 482	.127 53.7/14.4 704
L014	R $\overline{M}$ PR	--- 7.9 489							.401 7.9/10.4 482
L015	R $\overline{M}$ PR	--- 14.4 711							

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 61 METRA FAIRGROUNDS
DATE: JANUARY 1982

WIND SECTOR	SULFUR DIOXIDE			WIND SPEED			WIND DIRECTION		SULFUR DIOXIDE	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	6.5	16	0	9.5	16	0	16	2.2	14.5	2.4
NNE	3.9	182	0	17.0	182	0	182	24.9	98.7	16.6
NE	5.5	142	0	21.8	142	0	142	19.5	108.6	18.3
ENE	12.8	30	1	14.8	31	0	31	4.2	53.4	9.0
E	16.4	10	2	3.8	12	0	12	1.6	22.8	3.8
ESE	9.0	2	0	3.5	2	0	2	0.3	2.5	0.4
SE	30.7	4	0	4.7	4	0	4	0.5	17.1	2.9
SSE	2.5	2	0	40.0	2	0	2	0.3	0.7	0.1
S	10.0	14	0	6.2	14	0	14	1.9	19.5	3.3
SSW	9.2	53	3	17.0	56	0	56	7.7	67.8	11.4
SW	5.4	221	5	25.8	226	0	226	31.0	166.0	27.9
WSW	5.1	29	0	23.9	29	0	29	4.0	20.6	3.5
W	3.3	3	0	11.3	3	0	3	0.4	1.4	0.2
WNW	3.5	2	0	3.0	2	0	2	0.3	1.0	0.2
NW	0.4	7	0	8.0	7	0	7	1.0	0.4	0.1
NNW	0.5	2	0	0.0	2	0	2	0.3	0.1	0.0
TOTALS:		719	11		730	0	730.		595.0	
MONTHLY TOTALS:	6.1	733	11	20.0	730	14				

Table 48

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             MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
                                  AIR QUALITY BUREAU
                            DIRECTION ANALYSIS ---- REPORT

      SITE:      80     62  TAFT SCHOOL
      DATE:    JANUARY      1982

 WIND    *********  SULFUR  ********     *********  WIND  **********   ***  WIND  ***    ***  SULFUR  ***
SECTOR              DIOXIDE                         SPEED                DIRECTION            DIOXIDE

          MEAN    VALID     MISSING       MEAN    VALID     MISSING      HOURS    %       STRENGTH    %
                   OBS        OBS                  OBS        OBS                          FACTOR

  N       18.3     10          0          30.4     10          0           10    1.5         28.5    1.3
 NNE      41.9     17          0          27.5     17          0           17    2.6        111.0    5.1
  NE      36.8     50          2          33.2     52          0           52    7.9        286.6   13.1
 ENE      35.6    181          2          36.5    183          0          183   27.9       1003.7   45.9
  E       20.4     30          0          31.0     30          0           30    4.6         95.3    4.4
 ESE      13.7      7          0          20.7      7          0            7    1.1         14.9    0.7
  SE      10.7      8          0          11.5      8          0            8    1.2         13.3    0.6
 SSE      16.5     18          0          10.8     18          0           18    2.7         46.3    2.1
  S       14.1     43          0          13.6     43          0           43    6.6         94.4    4.3
 SSW      19.9     55          2          14.9     57          0           57    8.7        170.5    7.8
  SW      14.2     49          0          21.3     49          0           49    7.5        108.4    5.0
 WSW       7.4     88          7          33.2     95          0           95   14.5        101.4    4.6
  W        9.6     45          1          37.0     46          0           46    7.0         67.3    3.1
 WNW       8.5     14          0          47.7     14          0           14    2.1         18.5    0.8
  NW       8.2     17          0          46.1     17          0           17    2.6         21.7    1.0
 NNW       4.0     10          0          32.0     10          0           10    1.5          6.2    0.3
        **************************    **************************    **************   ****************
TOTALS:           642         14                  656          0        656.                2188.1

MONTHLY
TOTALS:   22.8    730         14          30.0    656         88
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Table 49

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 63 SHAWNEE PARK
DATE: JANUARY 1982

WIND SECTOR	********* SULFUR DIOXIDE ********			********* WIND SPEED **********			*** WIND DIRECTION ***		*** SULFUR DIOXIDE ***	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	15.1	17	0	14.3	17	0	17	2.6	43.0	1.6
NNE	12.2	53	5	21.4	58	0	58	8.8	108.3	4.1
NE	12.6	48	1	16.9	49	0	49	7.5	101.3	3.9
ENE	10.3	52	1	20.9	53	0	53	8.1	89.7	3.4
E	8.5	83	3	29.1	86	0	86	13.1	118.2	4.5
ESE	12.9	31	2	20.7	33	0	33	5.0	67.0	2.5
SE	18.8	16	2	12.5	18	0	18	2.7	50.4	1.9
SSE	22.5	16	1	8.5	17	0	17	2.6	60.3	2.3
S	32.4	39	5	13.5	44	0	44	6.7	211.7	8.1
SSW	35.7	56	1	20.4	56	1	57	8.7	334.9	12.7
SW	48.5	45	5	22.3	50	0	50	7.6	365.6	13.9
WSW	44.8	76	12	43.2	88	0	88	13.4	570.3	21.7
W	75.8	35	6	45.8	41	0	41	6.3	444.4	16.9
WNW	18.3	16	7	41.1	23	0	23	3.5	49.0	1.9
NW	5.2	7	7	53.6	14	0	14	2.1	6.1	0.2
NNW	7.1	7	1	33.2	8	0	8	1.2	8.3	0.3
	***********	***********	***********	***********	***********	***********	*******	*******	********	********
TOTALS:		597	59		655	1	656.		2628.5	
MONTHLY TOTALS:	26.1	605	139	26.4	663	81				

Table 50

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 64 NORTH JOHNSON
DATE: JANUARY 1982

WIND SECTOR	********* SULFUR DIOXIDE ********			********* WIND SPEED **********			*** WIND DIRECTION ***		*** SULFUR DIOXIDE ***	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	6.8	13	0	31.2	13	0	13	2.1	14.6	0.9
NNE	3.0	77	0	23.2	77	0	77	12.6	38.2	2.3
NE	5.7	119	1	21.6	118	2	120	19.6	112.3	6.7
ENE	5.6	63	0	21.1	63	0	63	10.3	58.4	3.5
E	10.4	31	0	18.8	31	0	31	5.1	53.4	3.2
ESE	7.3	13	0	12.2	13	0	13	2.1	15.7	0.9
SE	15.4	20	0	6.9	20	0	20	3.3	51.0	3.0
SSE	19.8	16	0	10.0	16	0	16	2.6	52.5	3.1
S	15.4	26	0	8.1	26	0	26	4.2	66.3	3.9
SSW	55.9	32	1	20.1	33	0	33	5.4	296.2	17.6
SW	49.9	78	3	37.8	80	1	81	13.2	644.4	38.2
WSW	17.5	75	2	53.1	77	0	77	12.6	217.3	12.9
W	17.5	17	1	32.0	18	0	18	2.9	49.3	2.9
WNW	0.7	9	0	36.0	9	0	9	1.5	1.0	0.1
NW	2.5	10	0	42.4	10	0	10	1.6	4.1	0.2
NNW	14.6	5	0	28.4	5	0	5	0.8	12.1	0.7
	*********	*********	*********	*********	*********	*********	*******	*******	********	********
TOTALS:		604	8		609	3	612.		1686.8	
MONTHLY TOTALS:	21.0	728	16	28.1	737	7				

Table 51

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 65 LOCKWOOD PARK
DATE: JANUARY 1982

WIND SECTOR	********* SULFUR DIOXIDE	********		********* WIND SPEED	**********		*** WIND DIRECTION ***		*** SULFUR DIOXIDE ***	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	52.9	12	1	29.0	13	0	13	2.1	105.4	4.3
NNE	6.2	77	0	23.7	77	0	77	12.6	79.3	3.3
NE	7.4	120	0	23.6	120	0	120	19.6	147.5	6.1
ENE	7.4	63	0	23.6	63	0	63	10.3	77.4	3.2
E	12.6	31	0	16.3	31	0	31	5.1	64.9	2.7
ESE	31.4	13	0	12.0	13	0	13	2.1	67.8	2.8
SE	16.7	20	0	11.0	20	0	20	3.3	55.5	2.3
SSE	20.8	16	0	13.3	16	0	16	2.6	55.3	2.3
S	18.1	26	0	12.1	26	0	26	4.2	78.2	3.2
SSW	42.3	31	2	18.0	33	0	33	5.4	217.8	8.9
SW	68.1	78	3	32.5	81	0	81	13.2	882.4	36.2
WSW	36.4	75	2	46.0	77	0	77	12.6	453.5	18.6
W	20.0	16	2	32.0	18	0	18	2.9	53.2	2.2
WNW	11.6	9	0	46.3	9	0	9	1.5	17.3	0.7
NW	29.9	10	0	45.7	10	0	10	1.6	49.7	2.0
NNW	35.2	5	0	28.8	5	0	5	0.8	29.2	1.2
	********	********	********	********	********	********	*******	*******	********	********
TOTALS:		602	10		612	0	612.		2434.4	
MONTHLY TOTALS:	25.8	733	11	26.6	613	131				

Table 52

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 66 COBURN ROAD
DATE: JANUARY 1982

WIND SECTOR	********* SULFUR DIOXIDE ********			********* WIND SPEED **********			*** WIND DIRECTION ***		*** SULFUR DIOXIDE ***	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	17.2	20	2	18.1	22	0	22	3.4	54.2	1.1
NNE	53.7	62	2	20.1	64	0	64	9.9	524.3	10.3
NE	43.0	99	1	28.5	99	1	100	15.4	670.4	13.2
ENE	38.6	65	2	25.2	67	0	67	10.3	395.1	7.8
E	49.7	48	0	20.9	48	0	48	7.4	375.7	7.4
ESE	48.1	10	0	8.5	10	0	10	1.5	75.7	1.5
SE	34.8	12	1	11.7	13	0	13	2.0	65.8	1.3
SSE	7.0	2	0	10.5	2	0	2	0.3	2.2	0.0
S	20.6	8	0	16.2	8	0	8	1.2	26.0	0.5
SSW	33.7	11	0	22.0	11	0	11	1.7	58.4	1.1
SW	69.7	72	1	42.9	73	0	73	11.2	790.3	15.5
WSW	72.4	167	3	51.8	170	0	170	26.2	1904.1	37.4
W	30.4	29	1	49.0	30	0	30	4.6	138.8	2.7
WNW	3.3	17	0	76.3	17	0	17	2.6	8.8	0.2
NW	1.8	8	0	57.6	8	0	8	1.2	2.3	0.0
NNW	2.6	5	1	40.0	6	0	6	0.9	2.0	0.0
	***********	***********	***********	***********	***********	***********	***********	***********	***********	***********
TOTALS:		635	14		648	1	649.		5094.1	
MONTHLY TOTALS:	52.2	728	16	35.9	648	96				

Table 53

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 840 14 NEW FARM
DATE: JANUARY 1982

WIND SECTOR	********* SULFUR DIOXIDE ********			********* WIND SPEED **********			*** WIND DIRECTION ***		*** SULFUR DIOXIDE ***	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	15.3	9	0	20.7	9	0	9	2.2	34.2	2.1
NNE	27.8	20	1	22.5	21	0	21	5.1	138.0	8.5
NE	25.0	70	1	32.3	71	0	71	17.4	434.2	26.9
ENE	21.2	63	0	28.8	63	0	63	15.4	331.4	20.5
E	20.0	15	0	17.3	15	0	15	3.7	74.4	4.6
ESE	13.0	1	0	17.0	1	0	1	0.2	3.2	0.2
SE	18.0	1	0	10.0	1	0	1	0.2	4.5	0.3
SSE	11.3	3	0	8.0	3	0	3	0.7	8.4	0.5
S	16.0	2	0	7.0	2	0	2	0.5	7.9	0.5
SSW	5.9	18	2	45.4	20	0	20	4.9	26.4	1.6
SW	7.9	76	1	50.0	77	0	77	18.9	149.0	9.2
WSW	19.3	58	0	37.3	58	0	58	14.2	277.8	17.2
W	9.6	33	0	51.8	33	0	33	8.1	78.6	4.9
WNW	3.7	19	0	76.2	19	0	19	4.7	17.4	1.1
NW	7.1	7	0	52.1	7	0	7	1.7	12.3	0.8
NNW	9.7	8	0	34.1	8	0	8	2.0	19.3	1.2
	*********	*********	*********	*********	*********	*********	*******	*******	********	********
TOTALS:		403	5		408	0	408.		1617.0	
MONTHLY TOTALS:	16.2	403	341	38.8	408	336				

Table 54

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 840 15 LAUREL-BN
DATE: JANUARY 1982

WIND SECTOR	********* SULFUR DIOXIDE ********			********* WIND SPEED **********			*** WIND DIRECTION ***		*** SULFUR DIOXIDE ***	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	10.1	6	2	22.0	7	1	8	1.1	9.7	0.5
NNE	13.6	29	3	28.5	28	4	32	4.3	63.0	3.3
NE	20.8	152	14	39.2	139	27	166	22.4	505.0	26.6
ENE	12.7	77	14	31.7	88	3	91	12.3	156.2	8.2
E	10.5	6	3	8.7	9	0	9	1.2	10.1	0.5
ESE	20.5	2	0	13.5	2	0	2	0.3	6.5	0.3
SE	11.0	2	0	2.5	2	0	2	0.3	3.5	0.2
SSE	10.3	3	0	6.3	3	0	3	0.4	4.9	0.3
S	19.8	5	1	26.8	6	0	6	0.8	15.8	0.8
SSW	5.5	34	9	53.5	39	4	43	5.8	29.9	1.6
SW	30.9	136	16	60.9	112	40	152	20.5	671.3	35.4
WSW	22.9	94	20	45.1	102	12	114	15.4	343.9	18.1
W	6.6	57	11	51.7	68	0	68	9.2	60.1	3.2
WNW	3.2	9	18	63.9	27	0	27	3.6	4.6	0.2
NW	6.5	6	1	56.5	7	0	7	0.9	6.2	0.3
NNW	3.6	8	2	24.1	9	1	10	1.4	4.6	0.2
	***********	***********	***********	***********	***********	***********	*******	*******	********	********
TOTALS:		626	114		648	92	740.		1895.4	
MONTHLY TOTALS:	18.9	626	118	44.6	649	95				

Table 55

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 62 TAFT SCHOOL
DATE: MAY 1982

WIND SECTOR	SULFUR DIOXIDE			WIND SPEED			WIND DIRECTION		SULFUR DIOXIDE	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	12.1	33	6	30.1	39	0	39	5.2	69.8	11.4
NNE	21.0	26	5	38.0	31	0	31	4.2	95.5	15.6
NE	19.6	22	6	38.2	28	0	28	3.8	75.4	12.3
ENE	22.7	54	23	29.6	77	0	77	10.4	214.3	35.1
E	2.7	26	9	26.2	35	0	35	4.7	12.3	2.0
ESE	5.1	16	6	27.1	22	0	22	3.0	14.3	2.3
SE	3.9	21	8	18.2	29	0	29	3.9	14.3	2.3
SSE	0.7	11	3	12.1	14	0	14	1.9	1.3	0.2
S	2.8	53	11	9.3	64	0	64	8.6	25.9	4.2
SSW	1.9	71	11	9.5	82	0	82	11.0	23.6	3.9
SW	1.6	61	8	11.9	69	0	69	9.3	17.1	2.8
WSW	4.0	46	9	18.1	55	0	55	7.4	32.2	5.3
W	0.3	28	19	33.0	47	0	47	6.3	1.5	0.2
WNW	0.5	38	19	39.3	57	0	57	7.7	3.3	0.5
NW	0.0	32	16	39.4	48	0	48	6.5	0.0	0.0
NNW	1.7	34	12	32.6	46	0	46	6.2	10.1	1.7
TOTALS:		572	171		743	0	743.		610.8	
MONTHLY TOTALS:	6.1	572	172	24.6	743	1				

Table 56

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 63 SHAWNEE PARK
DATE: MAY 1982

WIND SECTOR	SULFUR DIOXIDE			WIND SPEED			WIND DIRECTION		SULFUR DIOXIDE	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	8.5	64	1	37.6	65	0	65	8.9	77.7	5.8
NNE	7.7	46	3	37.3	49	0	49	6.7	50.6	3.8
NE	8.5	31	0	27.3	31	0	31	4.3	37.6	2.8
ENE	9.2	37	0	26.0	37	0	37	5.1	48.6	3.6
E	8.5	52	2	26.9	54	0	54	7.4	63.1	4.7
ESE	5.2	31	0	29.3	31	0	31	4.3	23.0	1.7
SE	7.1	36	0	19.7	36	0	36	4.9	36.5	2.7
SSE	10.4	27	0	22.0	27	0	27	3.7	40.1	3.0
S	13.1	64	1	13.7	65	0	65	8.9	119.8	8.9
SSW	13.2	61	0	18.2	61	0	61	8.4	115.0	8.5
SW	19.8	61	2	19.3	63	0	63	8.7	172.5	12.8
WSW	35.5	37	1	29.3	38	0	38	5.2	187.6	13.9
W	35.8	37	2	27.3	39	0	39	5.4	189.2	14.1
WNW	17.1	29	2	40.0	31	0	31	4.3	70.8	5.3
NW	9.2	52	6	54.8	58	0	58	8.0	68.3	5.1
NNW	9.0	35	8	51.1	43	0	43	5.9	45.0	3.3
TOTALS:		700	28		728	0	728.		1345.8	
MONTHLY TOTALS:	13.4	716	28	29.9	728	16				

Table 57

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 64 NORTH JOHNSON
DATE: MAY 1982

WIND SECTOR	********* SULFUR DIOXIDE ********			********* WIND SPEED **********			*** WIND DIRECTION ***		*** SULFUR DIOXIDE ***	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	0.7	49	1	37.0	50	0	50	6.8	4.8	0.6
NNE	1.1	46	0	35.6	44	2	46	6.3	7.0	0.8
NE	1.2	48	0	38.4	47	1	48	6.6	8.0	0.9
ENE	2.2	44	0	33.6	42	2	44	6.0	13.5	1.6
E	2.9	31	1	27.7	29	3	32	4.4	12.5	1.5
ESE	4.3	20	0	28.2	18	2	20	2.7	12.0	1.4
SE	5.4	26	2	18.3	28	0	28	3.8	19.6	2.3
SSE	4.3	26	0	16.6	26	0	26	3.6	15.6	1.8
S	8.1	50	0	16.3	50	0	50	6.8	56.4	6.6
SSW	17.4	60	2	18.4	61	1	62	8.5	145.4	17.0
SW	24.9	76	0	25.8	76	0	76	10.4	263.6	30.7
WSW	20.1	53	0	30.8	53	0	53	7.3	148.4	17.3
W	11.7	52	0	33.9	52	0	52	7.1	84.7	9.9
WNW	4.7	75	4	43.4	78	1	79	10.8	49.1	5.7
NW	2.5	42	2	45.5	44	0	44	6.0	14.6	1.7
NNW	0.9	20	0	34.2	20	0	20	2.7	2.5	0.3
	***************************			***************************			**************		***************	
TOTALS:		718	12		718	12	730.		857.7	
MONTHLY TOTALS:	8.4	730	14	31.4	728	16				

Table 58

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 65 LOCKWOOD PARK
DATE: MAY 1982

WIND SECTOR	SULFUR DIOXIDE			WIND SPEED			WIND DIRECTION		SULFUR DIOXIDE	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	71.1	48	2	35.1	50	0	50	6.8	472.7	35.0
NNE	11.1	46	0	32.1	46	0	46	6.3	70.7	5.2
NE	9.0	48	0	31.8	48	0	48	6.6	59.8	4.4
ENE	6.7	44	0	26.9	44	0	44	6.0	40.8	3.0
E	4.1	32	0	21.4	32	0	32	4.4	18.2	1.3
ESE	11.8	20	0	23.0	20	0	20	2.7	32.7	2.4
SE	5.0	28	0	18.3	28	0	28	3.8	19.4	1.4
SSE	2.5	26	0	15.2	26	0	26	3.6	9.0	0.7
S	5.3	50	0	13.4	50	0	50	6.8	36.7	2.7
SSW	3.5	61	1	15.1	62	0	62	8.5	29.6	2.2
SW	12.5	76	0	20.8	76	0	76	10.4	131.6	9.7
WSW	12.1	51	2	28.9	53	0	53	7.3	85.5	6.3
W	8.2	51	1	37.6	52	0	52	7.1	57.9	4.3
WNW	3.8	78	1	47.5	79	0	79	10.8	41.1	3.0
NW	23.2	44	0	47.5	44	0	44	6.0	141.4	10.5
NNW	40.0	19	1	33.1	20	0	20	2.7	105.3	7.8
TOTALS:		722	8		730	0	730.		1352.3	
MONTHLY TOTALS:	14.3	733	11	29.0	730	14				

Table 59

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 66 COBURN ROAD
DATE: MAY 1982

WIND SECTOR	SULFUR DIOXIDE			WIND SPEED			WIND DIRECTION		SULFUR DIOXIDE	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	7.8	35	6	36.2	37	4	41	6.1	46.6	7.2
NNE	9.3	49	3	35.9	43	9	52	7.7	77.8	12.0
NE	9.7	24	1	35.3	21	4	25	3.7	39.7	6.1
ENE	2.0	41	1	39.6	37	5	42	6.2	14.0	2.2
E	2.3	31	3	31.6	26	8	34	5.0	12.2	1.9
ESE	4.4	19	4	29.2	18	5	23	3.4	14.3	2.2
SE	1.9	17	2	34.0	19	0	19	2.8	5.5	0.9
SSE	2.2	11	0	24.1	10	1	11	1.6	4.1	0.6
S	4.6	14	3	25.2	15	2	17	2.5	11.0	1.7
SSW	7.6	18	2	29.2	14	6	20	3.0	23.3	3.6
SW	6.1	52	5	33.0	52	5	57	8.4	54.1	8.4
WSW	11.1	99	9	37.5	84	24	108	16.0	187.5	29.0
W	10.0	38	19	54.5	53	4	57	8.4	64.8	10.0
WNW	3.1	60	20	52.9	76	4	80	11.8	31.7	4.9
NW	1.0	42	11	54.0	49	4	53	7.8	7.2	1.1
NNW	8.5	36	2	32.9	35	3	38	5.6	52.2	8.1
TOTALS:		586	91		589	88	677.		646.1	
MONTHLY TOTALS:	6.6	649	95	40.2	589	155				

Table 60

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 840 14 NEW FARM
DATE: MAY 1982

WIND SECTOR	SULFUR DIOXIDE			WIND SPEED			WIND DIRECTION		SULFUR DIOXIDE	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	3.4	39	0	31.0	39	0	39	6.1	21.1	4.0
NNE	3.5	42	0	32.6	42	0	42	6.6	23.4	4.4
NE	3.8	57	1	38.3	58	0	58	9.1	34.4	6.5
ENE	3.2	57	0	35.2	57	0	57	9.0	29.0	5.5
E	2.1	27	1	30.4	28	0	28	4.4	9.0	1.7
ESE	8.3	8	0	23.0	8	0	8	1.3	10.6	2.0
SE	3.7	12	0	17.8	12	0	12	1.9	7.1	1.3
SSE	4.0	7	0	12.1	7	0	7	1.1	4.5	0.8
S	9.8	5	0	10.8	5	0	5	0.8	7.8	1.5
SSW	7.8	50	0	22.6	50	0	50	7.9	62.0	11.7
SW	8.7	98	0	26.4	98	0	98	15.4	135.5	25.6
WSW	7.1	70	0	25.4	70	0	70	11.0	79.0	14.9
W	5.8	43	2	40.8	45	0	45	7.1	39.7	7.5
WNW	3.6	51	0	55.0	51	0	51	8.0	29.2	5.5
NW	4.1	36	1	44.3	37	0	37	5.8	23.5	4.4
NNW	3.1	27	1	34.5	28	0	28	4.4	13.3	2.5
TOTALS:		629	6		635	0	635.		528.9	
MONTHLY TOTALS:	4.9	733	11	35.3	742	2				

Table 61

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 840 15 LAUREL-BN
DATE: MAY 1982

WIND SECTOR	SULFUR DIOXIDE			WIND SPEED			WIND DIRECTION		SULFUR DIOXIDE	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	0.6	42	2	32.7	44	0	44	5.9	3.7	1.0
NNE	1.7	46	1	41.3	47	0	47	6.3	11.5	3.2
NE	4.8	69	5	47.3	73	1	74	10.0	48.7	13.4
ENE	2.1	55	2	50.0	57	0	57	7.7	17.0	4.7
E	3.4	31	1	33.8	32	0	32	4.3	15.5	4.3
ESE	7.0	13	0	26.2	13	0	13	1.7	13.4	3.7
SE	1.2	9	0	16.1	9	0	9	1.2	1.6	0.4
SSE	1.3	10	0	12.8	10	0	10	1.3	1.9	0.5
S	0.0	3	0	13.6	3	0	3	0.4	0.0	0.0
SSW	3.5	16	11	30.3	27	0	27	3.6	8.2	2.3
SW	12.6	71	12	34.1	83	0	83	11.2	131.6	36.3
WSW	5.8	80	21	33.4	101	0	101	13.6	68.2	18.8
W	2.4	83	7	51.6	90	0	90	12.1	29.3	8.1
WNW	0.7	72	0	61.5	72	0	72	9.7	7.4	2.0
NW	0.5	53	0	49.3	53	0	53	7.1	3.9	1.1
NNW	0.2	27	1	37.8	28	0	28	3.8	0.8	0.2
TOTALS:		680	63		742	1	743.		362.7	
MONTHLY TOTALS:	3.6	680	64	42.0	743	1				

Table 62

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 62 TAFT SCHOOL
DATE: AUGUST 1982

WIND SECTOR	********* SULFUR DIOXIDE ********			********* WIND SPEED **********			*** WIND DIRECTION ***		*** SULFUR DIOXIDE ***	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	9.8	12	8	26.3	20	0	20	2.7	24.9	2.0
NNE	19.3	10	9	23.8	19	0	19	2.6	40.8	3.3
NE	26.2	32	47	36.3	79	0	79	10.7	177.3	14.3
ENE	30.1	72	43	34.5	115	0	115	15.6	458.2	37.0
E	17.8	21	6	19.5	27	0	27	3.7	79.0	6.4
ESE	9.1	10	5	22.4	15	0	15	2.0	19.2	1.6
SE	7.3	11	10	31.2	21	0	21	2.8	17.0	1.4
SSE	4.0	22	4	15.4	26	0	26	3.5	18.6	1.5
S	7.1	48	19	11.4	67	0	67	9.1	72.1	5.8
SSW	6.9	69	33	11.0	102	0	102	13.8	100.7	8.1
SW	8.4	79	40	13.3	119	0	119	16.1	140.3	11.3
WSW	6.2	38	17	14.5	55	0	55	7.4	49.8	4.0
W	4.1	20	5	17.6	25	0	25	3.4	17.3	1.4
WNW	1.9	10	1	19.0	11	0	11	1.5	4.0	0.3
NW	4.7	11	11	25.5	22	0	22	3.0	10.9	0.9
NNW	5.5	8	8	30.0	16	0	16	2.2	9.3	0.8
	*************************			*************************			*************		***************	
TOTALS:		473	266		739	0	739.		1239.3	
MONTHLY TOTALS:	12.4	473	271	21.2	739	5				

Table 63

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 63 SHAWNEE PARK
DATE: AUGUST 1982

WIND SECTOR	********* SULFUR DIOXIDE ********			********* WIND SPEED **********			*** WIND DIRECTION ***		*** SULFUR DIOXIDE ***	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	4.2	85	0	26.9	85	0	85	11.5	48.5	4.0
NNE	0.3	30	0	23.2	30	0	30	4.0	1.2	0.1
NE	0.5	35	0	26.1	35	0	35	4.7	2.4	0.2
ENE	0.0	83	0	32.6	83	0	83	11.2	0.0	0.0
E	3.2	68	0	21.5	68	0	68	9.2	29.6	2.4
ESE	1.5	21	0	18.9	21	0	21	2.8	4.3	0.4
SE	2.8	41	1	14.7	42	0	42	5.7	15.6	1.3
SSE	3.8	41	0	21.4	41	0	41	5.5	21.2	1.8
S	10.0	89	0	14.7	89	0	89	12.0	120.9	10.0
SSW	16.3	65	0	17.1	65	0	65	8.8	144.0	11.9
SW	24.1	66	0	21.5	66	0	66	8.9	216.1	17.9
WSW	43.4	40	3	21.5	43	0	43	5.8	235.9	19.5
W	41.7	33	0	23.0	33	0	33	4.4	187.0	15.5
WNW	35.1	17	1	25.4	18	0	18	2.4	81.1	6.7
NW	52.4	11	0	19.6	11	0	11	1.5	78.3	6.5
NNW	15.4	11	1	20.6	12	0	12	1.6	23.0	1.9
	***********	***********	***********	***********	***********	***********	*******	*******	********	********
TOTALS:		736	6		742	0	742.		1209.0	
MONTHLY TOTALS:	12.1	737	7	22.1	742	2				

Table 64

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 64 NORTH JOHNSON
DATE: AUGUST 1982

WIND SECTOR	SULFUR DIOXIDE			WIND SPEED			WIND DIRECTION		SULFUR DIOXIDE	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	9.0	27	3	27.2	30	0	30	4.0	33.7	1.6
NNE	7.6	76	2	28.6	78	0	78	10.5	80.2	3.8
NE	5.7	109	0	29.4	109	0	109	14.7	86.3	4.1
ENE	6.3	36	2	21.5	38	0	38	5.1	31.5	1.5
E	11.5	20	2	15.9	22	0	22	3.0	31.9	1.5
ESE	12.9	30	2	12.8	32	0	32	4.3	53.7	2.6
SE	7.5	28	0	23.4	28	0	28	3.8	29.2	1.4
SSE	13.2	43	0	12.4	43	0	43	5.8	78.8	3.8
S	18.2	86	2	12.1	88	0	88	11.9	217.4	10.4
SSW	28.6	71	2	15.6	73	0	73	9.8	282.0	13.4
SW	61.8	80	2	19.4	82	0	82	11.1	686.7	32.7
WSW	42.6	53	2	21.6	55	0	55	7.4	313.6	15.0
W	24.9	21	2	24.6	23	0	23	3.1	72.6	3.5
WNW	29.0	14	0	24.3	14	0	14	1.9	56.4	2.7
NW	19.6	11	0	32.4	11	0	11	1.5	29.9	1.4
NNW	6.2	15	1	31.1	16	0	16	2.2	12.9	0.6
TOTALS:		720	22		742	0	742.		2097.0	
MONTHLY TOTALS:	20.9	722	22	21.2	742	0				

Table 65

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 65 LOCKWOOD PARK
DATE: AUGUST 1982

WIND SECTOR	********* SULFUR DIOXIDE ********			********* WIND SPEED **********			*** WIND DIRECTION ***		*** SULFUR DIOXIDE ***	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	103.1	29	1	27.2	30	0	30	4.0	417.6	17.8
NNE	32.0	74	4	28.6	78	0	78	10.5	330.7	14.1
NE	4.9	106	3	29.4	109	0	109	14.7	72.5	3.1
ENE	12.6	37	1	21.5	38	0	38	5.1	65.1	2.8
E	14.7	22	0	15.9	22	0	22	3.0	45.2	1.9
ESE	13.4	31	1	12.8	32	0	32	4.3	58.0	2.5
SE	4.8	25	3	23.4	28	0	28	3.8	16.8	0.7
SSE	5.1	43	0	12.4	43	0	43	5.8	30.6	1.3
S	8.9	86	2	12.1	88	0	88	11.9	106.9	4.6
SSW	18.6	69	4	15.6	73	0	73	9.8	179.2	7.6
SW	23.1	78	4	19.4	82	0	82	11.1	251.6	10.7
WSW	25.7	53	2	21.6	55	0	55	7.4	190.2	8.1
W	27.3	23	0	24.6	23	0	23	3.1	87.7	3.7
WNW	47.2	13	1	24.3	14	0	14	1.9	85.7	3.6
NW	109.1	11	0	32.4	11	0	11	1.5	167.6	7.1
NNW	109.0	16	0	31.1	16	0	16	2.2	243.6	10.4
TOTALS:		716	26		742	0	742.		2349.1	
MONTHLY TOTALS:	23.5	716	28	21.2	742	2				

Table 66

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 66 COBURN ROAD
DATE: AUGUST 1982

WIND SECTOR	SULFUR DIOXIDE			WIND SPEED			WIND DIRECTION		SULFUR DIOXIDE	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	18.6	27	1	24.6	28	0	28	4.7	86.3	3.1
NNE	42.1	45	0	28.7	45	0	45	7.6	325.5	11.8
NE	56.3	82	0	31.7	82	0	82	13.9	793.2	28.8
ENE	22.4	37	0	30.0	37	0	37	6.3	142.4	5.2
E	20.9	18	0	25.1	18	0	18	3.0	64.6	2.4
ESE	14.2	24	0	31.9	24	0	24	4.1	58.6	2.1
SE	12.3	28	0	31.6	28	0	28	4.7	59.2	2.2
SSE	20.3	16	0	24.9	16	0	16	2.7	55.8	2.0
S	10.0	18	0	27.0	18	0	18	3.0	30.9	1.1
SSW	30.9	21	0	29.1	21	0	21	3.5	111.5	4.1
SW	19.0	45	1	29.6	46	0	46	7.8	146.9	5.3
WSW	31.8	102	4	32.8	106	0	106	17.9	557.3	20.3
W	21.9	36	2	24.3	38	0	38	6.4	135.5	4.9
WNW	9.8	28	0	22.9	28	0	28	4.7	47.1	1.7
NW	16.5	25	1	29.2	26	0	26	4.4	70.9	2.6
NNW	12.5	30	1	27.7	31	0	31	5.2	64.4	2.3
TOTALS:		582	10		592	0	592.		2750.2	
MONTHLY TOTALS:	28.2	734	10	29.2	593	151				

Table 67

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 840 15 LAUREL-BN
DATE: AUGUST 1982

WIND SECTOR	SULFUR DIOXIDE			WIND SPEED			WIND DIRECTION		SULFUR DIOXIDE	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	6.0	30	0	24.7	30	0	30	4.4	26.6	2.7
NNE	6.5	78	0	36.4	78	0	78	11.4	75.0	7.6
NE	7.1	88	0	35.8	88	0	88	12.8	92.4	9.3
ENE	6.2	25	0	25.5	25	0	25	3.6	22.9	2.3
E	5.8	24	2	19.0	26	0	26	3.8	20.6	2.1
ESE	9.1	24	1	16.6	25	0	25	3.6	32.3	3.3
SE	15.9	22	5	16.8	26	0	26	3.8	51.7	5.2
SSE	17.5	16	0	14.2	16	0	16	2.3	41.4	4.2
S	16.4	36	0	14.0	36	0	36	5.2	87.3	8.8
SSW	15.4	57	0	22.2	57	0	57	8.3	129.9	13.1
SW	13.8	107	0	21.4	107	0	107	15.6	218.4	22.0
WSW	10.6	101	4	26.1	105	0	105	15.3	158.4	15.9
W	5.0	36	0	28.2	36	0	36	5.2	26.6	2.7
WNW	1.9	13	0	27.6	13	0	13	1.9	3.7	0.4
NW	2.0	11	0	42.3	11	0	11	1.6	3.3	0.3
NNW	2.1	8	0	33.7	8	0	8	1.2	2.5	0.3
TOTALS:		676	12		687	0	687.		993.1	
MONTHLY TOTALS:	9.5	728	16	25.8	715	29				

Table 68

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 62 TAFT SCHOOL
DATE: NOVEMBER 1981

WIND SECTOR	********* SULFUR DIOXIDE ********			********* WIND SPEED **********			*** WIND DIRECTION ***		*** SULFUR DIOXIDE ***	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	10.0	12	0	26.3	12	0	12	1.7	16.8	1.4
NNE	18.5	8	0	23.8	8	0	8	1.1	20.7	1.7
NE	26.3	26	0	31.0	26	0	26	3.6	95.8	7.8
ENE	25.5	51	0	30.4	51	0	51	7.1	182.1	14.8
E	18.3	13	0	19.8	13	0	13	1.8	33.3	2.7
ESE	16.4	7	0	11.1	7	0	7	1.0	16.1	1.3
SE	12.0	11	0	12.3	11	0	11	1.5	18.5	1.5
SSE	16.0	30	0	13.4	30	0	30	4.2	67.2	5.5
S	11.4	127	1	15.3	128	0	128	17.8	202.8	16.5
SSW	9.8	125	2	13.9	127	0	127	17.6	171.6	14.0
SW	11.6	122	0	16.1	122	0	122	16.9	198.2	16.2
WSW	8.5	101	2	22.2	103	0	103	14.3	120.2	9.8
W	7.3	35	1	26.6	36	0	36	5.0	35.8	2.9
WNW	4.8	18	0	38.3	18	0	18	2.5	12.1	1.0
NW	4.1	17	0	41.0	17	0	17	2.4	9.8	0.8
NNW	17.0	11	0	29.1	11	0	11	1.5	26.2	2.1
	***********	***********	***********	***********	***********	***********	*******	*******	********	********
TOTALS:		714	6		720	0	720.		1227.2	
MONTHLY TOTALS:	12.3	714	6	20.0	720	0				

Table 69

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 63 SHAWNEE PARK
DATE: NOVEMBER 1981

WIND SECTOR	SULFUR DIOXIDE MEAN	SULFUR DIOXIDE VALID OBS	SULFUR DIOXIDE MISSING OBS	WIND SPEED MEAN	WIND SPEED VALID OBS	WIND SPEED MISSING OBS	WIND DIRECTION HOURS	WIND DIRECTION %	SULFUR DIOXIDE STRENGTH FACTOR	SULFUR DIOXIDE %
N	31.5	14	0	33.3	14	0	14	1.9	62.2	2.0
NNE	27.1	21	0	18.5	21	0	21	2.9	80.3	2.6
NE	7.0	23	3	21.3	26	0	26	3.6	22.7	0.7
ENE	7.5	31	1	21.3	32	0	32	4.5	32.8	1.1
E	14.6	34	0	15.4	34	0	34	4.7	70.0	2.3
ESE	16.4	20	0	10.8	20	0	20	2.8	46.3	1.5
SE	23.8	28	1	10.2	29	0	29	4.0	94.0	3.1
SSE	19.8	27	0	10.0	27	0	27	3.8	75.4	2.5
S	26.0	98	1	16.9	99	0	99	13.8	359.4	11.7
SSW	28.3	121	0	20.7	121	0	121	16.8	483.0	15.8
SW	42.6	119	1	22.6	120	0	120	16.7	715.0	23.3
WSW	52.1	61	3	25.2	64	0	64	3.9	448.3	14.6
W	58.4	59	0	27.3	59	0	59	8.2	486.0	15.9
WNW	14.4	21	0	38.6	21	0	21	2.9	42.7	1.4
NW	12.6	18	0	36.9	18	0	18	2.5	32.0	1.0
NNW	8.1	14	0	39.1	14	0	14	1.9	16.0	0.5
TOTALS:		709	10		719	0	719.		3065.9	
MONTHLY TOTALS:	30.6	710	10	21.6	720	0				

Table 70

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 64 NORTH JOHNSON
DATE: NOVEMBER 1981

WIND SECTOR	********* SULFUR DIOXIDE ********			********* WIND SPEED **********			*** WIND DIRECTION ***		*** SULFUR DIOXIDE ***	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	8.3	13	0	29.0	11	2	13	1.9	16.2	0.4
NNE	4.8	26	2	28.9	22	6	28	4.1	18.7	0.5
NE	14.5	44	0	24.7	36	8	44	6.5	95.7	2.4
ENE	11.4	10	0	20.2	9	1	10	1.5	17.1	0.4
E	13.6	9	1	12.1	6	4	10	1.5	18.4	0.5
ESE	23.2	15	0	14.5	11	4	15	2.2	52.2	1.3
SE	20.6	23	1	13.5	23	1	24	3.5	71.0	1.8
SSE	28.0	50	1	15.8	45	6	51	7.5	209.9	5.3
S	45.5	83	0	19.8	67	16	83	12.2	566.2	14.3
SSW	51.1	94	1	20.0	69	26	95	14.0	720.1	18.2
SW	66.4	127	3	28.3	101	29	130	19.1	1264.3	31.9
WSW	42.9	90	1	33.3	74	17	91	13.4	578.9	14.6
W	35.5	36	0	31.6	30	6	36	5.3	191.6	4.8
WNW	21.4	25	3	38.6	21	7	28	4.1	80.2	2.0
NW	18.1	15	0	41.2	11	4	15	2.2	40.7	1.0
NNW	21.4	7	0	17.4	5	2	7	1.0	22.5	0.6
	***************	***************	***************	***************	***************	***************	***************	***************	***************	***************
TOTALS:		667	13		541	139	680.		3963.6	
MONTHLY TOTALS:	40.9	705	15	25.1	541	179				

Table 71

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 65 LOCKWOOD PARK
DATE: NOVEMBER 1981

WIND SECTOR	********* SULFUR DIOXIDE ********			********* WIND SPEED **********			*** WIND DIRECTION ***		*** SULFUR DIOXIDE ***	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	96.8	12	1	26.2	13	0	13	1.9	173.6	6.0
NNE	5.2	27	1	24.4	28	0	28	4.1	21.0	0.7
NE	24.8	41	3	21.2	44	0	44	6.5	152.0	5.2
ENE	9.5	9	1	17.6	10	0	10	1.5	12.8	0.4
E	6.4	10	0	11.3	10	0	10	1.5	9.6	0.3
ESE	35.0	15	0	13.3	15	0	15	2.2	78.5	2.7
SE	13.2	24	0	11.2	24	0	24	3.5	47.4	1.6
SSE	15.5	51	0	14.5	51	0	51	7.5	118.2	4.1
S	33.1	83	0	16.7	83	0	83	12.2	410.7	14.1
SSW	27.8	95	0	17.1	95	0	95	14.0	394.8	13.6
SW	39.6	128	2	25.0	130	0	130	19.1	757.7	26.1
WSW	31.3	91	0	27.8	91	0	91	13.4	425.8	14.6
W	17.5	35	1	31.5	36	0	36	5.3	91.6	3.1
WNW	16.7	28	0	39.3	28	0	28	4.1	69.9	2.4
NW	51.8	13	2	35.9	15	0	15	2.2	100.7	3.5
NNW	41.8	7	0	16.5	7	0	7	1.0	43.7	1.5
	*********	*********	*********	*********	*********	*********	*******	*******	********	********
TOTALS:		669	11		680	0	680.		2907.6	
MONTHLY TOTALS:	29.4	704	16	22.3	680	40				

Table 72

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 80 66 COBURN ROAD
DATE: NOVEMBER 1981

WIND SECTOR	SULFUR DIOXIDE			WIND SPEED			WIND DIRECTION		SULFUR DIOXIDE	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	13.5	18	0	15.5	18	0	18	2.5	34.3	0.6
NNE	31.6	34	0	24.7	34	0	34	4.7	151.5	2.8
NE	61.6	35	0	26.3	35	0	35	4.9	304.1	5.6
ENE	18.1	15	0	16.7	15	0	15	2.1	38.3	0.7
E	44.2	13	0	12.8	13	0	13	1.8	81.0	1.5
ESE	74.9	11	1	18.4	11	1	12	1.7	116.2	2.2
SE	51.1	13	1	15.5	14	0	14	2.0	93.7	1.7
SSE	16.7	7	1	21.5	8	0	8	1.1	16.5	0.3
S	34.1	16	0	15.6	16	0	16	2.2	77.0	1.4
SSW	20.8	25	0	21.6	25	0	25	3.5	73.3	1.4
SW	75.5	205	3	38.5	207	1	208	29.1	2183.0	40.4
WSW	65.0	221	1	42.0	222	0	222	31.0	2026.1	37.5
W	22.6	35	0	42.6	35	0	35	4.9	111.6	2.1
WNW	12.2	30	0	50.5	30	0	30	4.2	51.6	1.0
NW	9.6	20	0	36.5	20	0	20	2.8	27.1	0.5
NNW	7.5	11	0	29.0	11	0	11	1.5	11.6	0.2
TOTALS:		709	7		714	2	716.		5396.9	
MONTHLY TOTALS:	54.3	713	7	35.3	715	5				

Table 73

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

DIRECTION ANALYSIS ---- REPORT

SITE: 840 14 NEW FARM
DATE: NOVEMBER 1981

WIND SECTOR	*********	SULFUR DIOXIDE	********	*********	WIND SPEED	**********	*** WIND	DIRECTION ***	*** SULFUE	DIOXIDE ***
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	9.6	13	0	14.0	13	0	13	2.6	25.5	3.2
NNE	6.0	28	0	20.3	28	0	28	5.7	34.4	4.3
NE	6.9	43	0	25.6	43	0	43	8.7	60.7	7.7
ENE	4.8	20	1	17.7	21	0	21	4.3	19.6	2.5
E	14.8	9	0	15.7	9	0	9	1.8	27.2	3.4
ESE	1.3	3	0	9.3	3	0	3	0.6	0.8	0.1
SE	14.1	7	1	8.5	8	0	8	1.6	20.2	2.6
SSE	7.1	7	0	7.7	7	0	7	1.4	10.2	1.3
S	11.5	4	0	7.5	4	0	4	0.8	9.4	1.2
SSW	3.8	28	1	19.9	29	0	29	5.9	21.8	2.8
SW	4.0	87	0	29.7	87	0	87	17.6	71.2	9.0
WSW	13.6	140	0	33.6	140	0	140	28.4	389.4	49.3
W	6.9	64	1	40.8	65	0	65	13.2	90.3	11.4
WNW	1.3	23	0	49.2	23	0	23	4.7	6.1	0.8
NW	1.4	12	0	30.0	12	0	12	2.4	3.4	0.4
NNW	0.0	1	0	4.0	1	0	1	0.2	0.0	0.0
	*********	*********	*********	*********	*********	*********	*******	*******	********	********
TOTALS:		489	4		493	0	493.		790.1	
MONTHLY TOTALS:	7.9	489	231	29.5	493	227				

Table 74

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
AIR QUALITY BUREAU
DIRECTION ANALYSIS ---- REPORT

SITE: 840 15 LAUREL-BN
DATE: NOVEMBER 1981

WIND SECTOR	SULFUR DIOXIDE			WIND SPEED			WIND DIRECTION		SULFUR DIOXIDE	
	MEAN	VALID OBS	MISSING OBS	MEAN	VALID OBS	MISSING OBS	HOURS	%	STRENGTH FACTOR	%
N	7.4	11	0	16.8	11	0	11	1.5	11.4	0.8
NNE	7.7	40	0	21.5	40	0	40	5.6	43.3	3.0
NE	8.0	57	2	23.4	59	0	59	8.2	64.1	4.5
ENE	8.4	25	0	14.8	25	0	25	3.5	29.5	2.1
E	8.8	6	0	13.0	6	0	6	0.8	7.4	0.5
ESE	7.7	8	0	10.1	8	0	8	1.1	8.7	0.6
SE	20.5	10	0	9.0	10	0	10	1.4	28.8	2.0
SSE	4.0	6	0	9.0	6	0	6	0.8	3.4	0.2
S	7.2	9	0	13.3	9	0	9	1.3	9.1	0.6
SSW	6.9	23	0	32.7	23	0	23	3.2	22.3	1.6
SW	47.7	100	0	44.8	100	0	100	13.9	670.9	46.8
WSW	11.2	253	6	37.9	258	1	259	36.0	398.5	27.8
W	5.5	102	0	37.3	102	0	102	14.2	78.9	5.5
WNW	4.2	43	0	49.7	43	0	43	6.0	25.4	1.8
NW	3.6	9	0	40.5	9	0	9	1.3	4.6	0.3
NNW	20.2	9	0	25.2	9	0	9	1.3	25.6	1.8
TOTALS:		711	8		718	1	719.		1432.0	
MONTHLY TOTALS:	14.3	711	9	34.5	718	2				

Table 75

DATE 82 01 01 FRI

METEOROLOGY HOUR	W.S.	W.D	MIX HT
1-300	[illegible] 2.5	ENE-NE	157
8-2400	1-2	VAR	

Stable air
Mix Ht. Lift at noon

BILLINGS SO2 HOUR	061	062	063	064	065	066
10-24			X	X	X	X
1-5		X				
16-24		X				
1,3,7						X

Calm conditions causing buildup at all sites at same time. Source: B&C.

LAUREL SO2 HOUR	014	015
5-11	X	X
19-22	X	X

Calm conditions Source: A

MPCo	ConBP	ConFC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	Cen SP	Cen FC
X	X	X	X		X	X					X	X	X	X	X	X	X	X	X	X

High 24 066 = .060
General soup - Calm conditions Some peaks at 066 (1, 3, 7) with ENE. wind.

DATE 82 01 02 SAT

METEOROLOGY HOUR	W.S.	W.D	MIX HT
1-24	.6-2.5	ENE VAR	275

Limited mixing all day

BILLINGS SO2 HOUR	061	062	063	064	065	066
1-1700		X				X
5-8			X	X	X	

Calm conditions. Buildup at 066 all night & day too — Near mix HT. Source B&C

LAUREL SO2 HOUR	014	015
1-11	X	X
23-24	X	X

Calm conditions - Source: A maybe B&C

MPCo	ConBP	ConFC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	Cen SP	Cen FC
X	X	X	X		X	X					X	X	X	X	X	X	X	X	X	X

High 24 066 = .102
062 & 066 mostly influenced by B.

DATE 82 01 03 SUN

METEOROLOGY HOUR	W.S.	W.D	MIX HT
1-1600	.6-2.8	VAR	163
17-24	1.5-3.9	SW-SSW	

Stable - neutral limited mixing

BILLINGS SO2 HOUR	061	062	063	064	065	066
4-15		X	X	X	X	X
16-24			X	X	X	X

From 4-15 Conc. Buildup at all sites. 16-2400 WSW Blow SO2 out of 062. Lower Conc. at rest

LAUREL SO2 HOUR	014	015
1-13	X	
13, 19-21		X

Calm conditions 1-13 - Buildup. Source: A

MPCo	ConBP	ConFC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAH	Cen SP	Cen FC
X	X	X	X		X	X					X	X	X	X	X	X	X	X	X	X

High 24 066 = .087
Billings sites influenced by B&C.

DATE 82 01 04 MON

METEOROLOGY HOUR	W.S.	W.D	MIX HT
[illegible]	[illegible] 2.0	VAR	
[illegible] 2400	[illegible]	NE E	[illegible]

Unlimited at end of day.

BILLINGS SO2 HOUR	061	062	063	064	065	066
[illegible]	X	X	X	X	X	X
[illegible]						X

Inversion - containment. Blowout at 1700 - on & lifting - Source: B&C

LAUREL SO2 HOUR	014	015
[illegible]		X
[illegible]	X	X

Hours in a.m. - Source A
Hour 2100 - Source B&C

MPCo	ConBP	ConFC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAH	Cen SP	Cen FC
X	X	X	X		X	X					X	X	X	X	X	X	X	X	X	X

High 24 066 = .059
[illegible] 1 HR Readings of .020 & .025 in Laurel from Billings.

DATE 82 01 05 TUES

METEOROLOGY HOUR	W.S.	W.D	MIX HT
1-2400	3-4	ENE - NE	
0, 12			888
6,18,24			~150

BILLINGS SO2 HOUR	061	062	063	064	065	066
1-2400		X				X

Wind blowing all day - Conc at 062 & 066 only Source for 062 = B&C, Source for 066 = Cordly

LAUREL SO2 HOUR	014	015
1-24		X

Source for 015 = B&C

MPCo	ConBP	ConFC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	Cen SP	Cen FC
X	X	X	X		X	X					X	X	X	X	X	X	X	X	X	X

High 24 066 = .050
066 totally influenced by C.
015 influenced by B&C (Billings).
24-HR at 015 = .013
063, 064, 065 are Baseline

DATE 82 01 06 WED

METEOROLOGY HOUR	W.S.	W.D	MIX HT
1-700	1.5-3.0	ENE	
8-2400	1.5-4.0	WSW	

ENE winds from 1-5-82 die down & switch to WSW

BILLINGS SO2 HOUR	061	062	063	064	065	066
10-2400			X	X	X	X
1-300		X				
11-1400		X				

Conc at 062 - 066 due to WSW winds Source B&C
B only at 066 - Slosh back at 062 - 11-1400

LAUREL SO2 HOUR	014	015
2-400		X
10-2400		X

2-400 - Area B-C
10-2400 - Area A

MPCo	ConBP	ConFC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAH	Cen SP	Cen FC
X	X	X	X		X	X					X	X	X	X	X	X	X	X	X	X

High 24 065 = .093
"Looks like MPCo plume coming down on 066 & 065" (55)

DATE 82 01 07 THUR

METEOROLOGY HOUR	W.S.	W.D	MIX HT
1-2400	3-5	WSW All day	160

BILLINGS SO2 HOUR	061	062	063	064	065	066
1-2400			X	X	X	X

WSW winds all day Conc at 066 & 065 - Source B
Conc at 063 & 064 - B&C

LAUREL SO2 HOUR	014	015
1-2400		X

Source: A

MPCo	ConBP	ConFC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAH	Cen SP	Cen FC
X	X	X	X		X	X					X	X	X	X	X	X	X	X	X	X

High 24 066 = .091
Source A could be impacting on Billings But looks low. at 062 - (baseline) - where you'd expect to see it -

DATE 82 01 08 FRI

METEOROLOGY HOUR	W.S.	W.D	MIX HT
1-1600	2-4	wsw-sw	
17-2400	5-7	ne-ene	

neutral stability.

BILLINGS SO2 HOUR	061	062	063	064	065	066
1-1500			X	X	X	X
17-2400		X				

Conc at 063-066 from Source B
Conc at 062 from B&C with windshift.

LAUREL SO2 HOUR	014	015
1-10		X
21-24		X

1-10 - from A
21-24 - B&C

MPCo	ConBP	ConFC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAH	Cen SP	Cen FC
X	X	X	X		X	X					X	X	X	X	X	X	X	X	X	X

High 24 066 = .104
"066 looks like plume center line from MPCo" (55)

Table 76

METEOROLOGY				BILLINGS SO2							LAUREL SO2			DATE 82 01 09 SAT
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015	
1-2400	3-6	ENE all day.		1-2400		X					1-2400		X	High 24 062=.037 Note: conc at 015 totally from Billings. "Most likely MPCo" (55) 24-015 = .022
				2-500						X				
				Conc at 062 – all day – from B&C Conc at 066 – probably from C only –							Source: B&C, "mostly B"			

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

METEOROLOGY				BILLINGS SO2							LAUREL SO2			DATE 82 01 10 SUN
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015	
1-2400	2-4	ENE all day		1-2400		X				X	1-2400		X	High 24-066=.048 Conc at 015 from Billings 24 - 015 = .021
				12-16	X									
				14-15, 24					X					
				Conc at 066, 065, 061 – from Source C Conc at 062 – from B&C							Conc at 015 from B&C			

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

METEOROLOGY				BILLINGS SO2							LAUREL SO2			DATE 82 01 11 MON
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015	
1-1800	1.5-4.5	ENE		1-1800		X					1-2000		X	High 24-062=.038 Conc in Laurel from Billings. 24-015= .019
19-24	2-3	E, SE		1-1400						X				
				3-1000	X				X					
				Conc at 061, 065, 066 – from C Conc at 062 – B&C							Conc at 015 from B&C			

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X		X	X	X	X	X	X	X

METEOROLOGY				BILLINGS SO2							LAUREL SO2			DATE 82 01 12 TUE
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015	
1-6	1-1.5	VAR		6-2400			X	X	X	X	11-12		X	High 24 064=.045
7-12	2-3	SSW		18-2400		X					20-24		X	
13-19	3-4	W												
20-24	1-2	SSW												
				Conc at 065 & 066 – Source B " " 063 & 064 – Source B&C							Source: A			

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

METEOROLOGY				BILLINGS SO2							LAUREL SO2			DATE 82 01 13 WED
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015	
1-900	~1.5	VAR		1-700	X	X				X	1-2400		X	High 24-$\substack{063\\066}$=.033 Faster winds bringing plume down. Hours 21, 22 @ 062 from A.
10-24	3-4	WSW-W		8-2400			X	X	X	X				
				21-22		X								
				Conc at 061, 062, 066 – Similar, calm – Source B Conc 065, 066 – B, Conc 063, 064 – B&C							SPOTTY – HRS – SOURCE A			

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

METEOROLOGY				BILLINGS SO2							LAUREL SO2			DATE 82 01 14 THUR
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015	
1-2300	2-5	WSW-SW & W		1-2300			X	X	X	X	1-1500		X	High 24-064=.039 Hours 3-4 & 10-13 at 062 from Source A (Laurel) ~ .015-.020
2400	9	ENE		3-400		X								
				10-1300		X								
				23-2400		X								
				065 & 066 – Source B 062 – Sources A, B, & C 064 & 063 – Source B&C							Source A			

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					✓	X	X	X	X	X	X	X	X	X

METEOROLOGY				BILLINGS SO2							LAUREL SO2			DATE 82 01 15 FRI
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015	
1-1200	3-8	ENE		1-1400		X					1, 6, 8, 12		X	
13-2400	1-2	SW & VAR calm.		22-23		X					23, 24		X	
				15-1900			X							
				20-2100					X					
				062 from Sources B&C 063 & 065 - from C							Morning Readings B&C 23, 24 – A			

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

METEOROLOGY				BILLINGS SO2							LAUREL SO2			DATE 82 01 16 SAT
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015	
1-800	.2-1	SSE & VAR		1-2400			X			X	1-2400		X	High 24-015=.055 Higher conc. in Laurel on this day.
9-1800	1.7-5	WSW-W		10-2400				X						
19-2400	1.5	S		9-1900					X					
Unlimited mixing in mid day				Source for all: B&C – Fumigation – Stronger winds bringing down SO2 – 066 – Higher in am.							Source: A –			

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

Table 77

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-700			x	x	x	x
1800			x } B & C	x } B & C	x } B & C	x } B
9-2400			x	x	x	x

conc are in early a.m. and late p.m. - dependent on wind dir. No. Conc in mid day w/ NW wind

LAUREL SO2		
HOUR	014	015
1-800		x
23,24		x

Source A

DATE 82 01 17 SUN

High 24-066 = .034

Faster winds occured all day —

MPCo	ConBP	ConFC	GtWt	ExCat	ExCox	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	CenSP	CenFC
x	x	x	x	x	x	X					X	x	x	X	X	X	X	X	X	X

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	ENE	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-300			x (B)	x (B)	x (B)	x (B)
9-1800		x	(C)	(C)		
21-2400	x + (C)					

Conc are dependent on wind dir. Conc at 063 thru 066 go to zero when wind switches to ENE

LAUREL SO2		
HOUR	014	015
2-400		x (A)
10-1800		x (A)
23-24		x (B & C)

DATE 82 01 18 MON

High 24-064 = .094

Note High Conc at 064 from 1-1000 — "Looks like MPCo." (55)

MPCo	ConBP	ConFC	GtWt	ExCat	ExCox	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	CenSP	CenFC
x	x	x	X		x	x					X	X	X	X	X	X	X	X	X	X

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-2400	[illegible]-3.5	ENE	

Mostly wind out of ENE all day.

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-800		x } B & C				
24		x				
5, 8-16						x } C
22, 24						x

Conc at two sites only - 062 & 066

LAUREL SO2		
HOUR	014	015
1-2400	x	x

Conc from B & C

DATE 82 01 19 TUE

High 24-062 = .040

24-HR conc in Laurel .021 & .022 - all from Billings.

MPCo	ConBP	ConFC	GtWt	ExCat	ExCox	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	CenSP	CenFC
x	x	x	x	x	X	X					X	X	x	x	x	x	x	x	X	x

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-2400	1.5-3.5	ENE, E, NE	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-1200		x } B & C				← C
18-23		x				
1-700					x	x
20-24						x

Note fanning of plume from 1-700 - STD Dev of W.D. Spread out plume at 065 from "C".

LAUREL SO2		
HOUR	014	015
1-1300	X	x

Source - B & C
Note good correlation

DATE 82 01 20 WED

High 24-062 = .025

Note = All Laurel conc from Billings

24 hr conc
014 = .020
015 = .017

MPCo	ConBP	ConFC	GtWt	ExCat	ExCox	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	CenSP	CenFC
X	X	X	X	x	x	X					X	X		X	X	X	X	X	X	X

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-2000	2.5-3.5	ENE	
21-2400	2.5	N, NNW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-1900		x (B & C)				x (C)
20-22					x (C)	

ENE winds most of day. Switch at 2000 from the N — Note conc at 065 from C.

LAUREL SO2		
HOUR	014	015
1-200		X

from B & C

DATE 82 01 21 THUR

High 24-066-.049

Not much SO2 in Laurel from Billings - probably good mixing.

MPCo	ConBP	ConFC	GtWt	ExCat	ExCox	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	CenSP	CenFC
X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-400	1.5-2.5	NNW	
5-1200	.2-1	SW-VAR	
13-2400	1-3.5	ENE	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
8-1200	X	x	x	x	x	x
1-300					x (C)	
13-1700		x } B & C				(x } C
22-2400		x				x)

Conc from 8-12 at all sites — calm cond. Conc at 066 & 065 from C

LAUREL SO2		
HOUR	014	015
10-1200	x	X
13-1900	x	x from B & C

Conc in p.m due to Source B & C

DATE 82 01 22 FRI

High 24-066 = .034

Wind picks up in p.m & Brings conc to Laurel from Billings.

MPCo	ConBP	ConFC	GtWt	ExCat	ExCox	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	CenSP	CenFC
x	x	x	X	x	X	X					X	x	x	x	x	x	x	x	x	x

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-2400	2-4.5	ENE	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-2400		(X) B & C				(X) C only

ENE winds all day - Conc at 066 from C only

LAUREL SO2		
HOUR	014	015
1-2400	(X) B & C	X

DATE 82 01 23 SAT

High 24-066 = .092

Conc. in Laurel from Billings all day.
24 for 014 = .036
for 015 = .030
Note good correlation

MPCo	ConBP	ConFC	GtWt	ExCat	ExCox	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	CenSP	CenFC
x	x	x	x	X	x	x					x	X	x	x	x	x	X	x	x	X

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-600	.5-2	VAR	
7-11	2.5-4.5	WSW	
12-20	4.5-7.5	NW	
21-24	1-2	SSW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-1000	X	x	X	x	X	X
14-15					X (C)	
17						x (C)
22-24						X (B)

Conc at all sites from 1-10 — Calm conditions SO2 Buildup - faster winds blow it out.

LAUREL SO2		
HOUR	014	015
1-1000	X	X

Inversion buildup - Source: A

DATE 82 01 24 SUN

High 24-066 = .039

MPCo	ConBP	ConFC	GtWt	ExCat	ExCox	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	CenSP	CenFC
X	X	X	X	x	X	X					X	X	X	X	X	X	X	X	X	X

Table 78

DATE 82 01 25 MON

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-2400	1-2	Variable Calm		1-2400 8-2400	X	X	X	X	X	X	6-2400 5-900 13-2400	X X	X
					←		Source B & C			→	← Source A		→
Mix Ht 100-200 m.				Calm conditions — Inversion buildup at All sites — Higher Conc at mid day									

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	✓	X	X	X	X	X						X	X	X	X	X	X	X	X	X

High 24 066 =.079

Note Higher conc at 066 — near mixing height.

DATE 82 01 26 Tue.

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-1200	1-2	SSW-S		1-1700				X	X	X	1-1700	X	X
13-2400	2.2-6.4	WSW to WNW		21-2400				X	X	X			
				1-300	X	X							
				8-1200	X	X							
				Source B & C. Inversion Buildup. Then blow out. Then 061, 065 & 066 Hit by Source B.							Inversion Buildup followed by Blow out		

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
✓	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X

High 24 066 =.062

Note buildups at end of day after blowout

DATE 82 01 27 WED

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-1800	2.5-7.5	W-SW W-NW		3-400 3-700 1800 1-600 17-1800				(X)	X (X) C	← B X (X)	21-2200	X	
19-2400	2.5-3.5	ENE											
unlimited at 1200				Readings in a.m due to Source B. pm due to Source B									

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	✓	X	X	X	X	X						X	X	X	X	X	X	X	X	X

High 24 066 =.014

Good ventilation all day.

Readings at 1700-1800 due to NNW wind from Source C.

DATE 82 01 28 THUR

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-600	1-3.5	FNE	250	9-2000	X						3-2000	X	
7-1500	1	SSW		3-2400		X			X				
16-2100	1	SE SSE		8-2400				X					
22-2400	1	SSW		1-2400						X			
					←	Source B & C				→			
Some N drainage in afternoon from the south				ENE winds starting day — going to calm - var conditions — Build up starts - some sites later.							Buildup during calm Source A		

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X

High 24 066 =.080

Note: High conc at 066 at start of day. Readings at 2400 on previous day at zero.

Note light Blowouts at 066 - 17-1800 & 065 - 19-2200

DATE 82 01 29 FRI

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-2400	1.5-4.5	SSW WSW SW	200	1-2400				X ↑ B&C	X B	X	1900	X	
Higher wind speeds at mid day.				High Conc all day - SSW winds bring down plumes from B & C							Not much SO2 in Laurel.		

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X

High 24 065 =.063

Not much SO2 Noted at Laurel site w/ SSW winds — Why?

"Suspect MPC Stack in Billings"

(55)

DATE 82 01 30 SAT

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-500	1-2	SSW-W	150	12-1800 23-24 10-2400 1-500 15-1800 1-2400	X C X	(X) B&C		(X	B X (X) C	B&C (X)	10-2400	X	
600-2200	1.5-5.5	ENE-NE											
23-2400	1	W											
				SSW wind changing to ENE. B first on 066 & then changing to C at 900							ENE wind - Source B & C		

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X

High 24-066=.088

Conc in Laurel due to Billings

24-014 = .022

DATE 82 01 31 SUN

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-1200	1-1.5	SSW-S	190	1-900	X	X		B&C			5-1200	X	
13-1800	3.5-6	NW		1-1200				X	X	X			
19-2300	3-6	NNW-N		19-2300					(X)	← C			
24	2	NE											
				calm conditions — conc at all sites in a.m Conc at 065 at 19-2300 from C							Source A & SSW winds		

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-065=.055

Table 79

Table 80

DATE 82 05 01 SAT

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
[illegible]	.5-1	SE-VAR	
[illegible]	.5	WSW-SW	
5-2200	1.5-2.5	E-VAR	
[illegible]-2400	-2	S-VAR	

[illegible] at noon & [illegible]

BILLINGS SO2						
HOUR	061	062	063	064	065	066
[illegible]-1200			X	X	X	X
22-24hr			X	X		
		← —	Source	B & C	—	— →

Inversion breakup in a.m. — Conc building backup at 063-064 at 22-2400

LAUREL SO2		
HOUR	014	015
9-1000	X	

Source A.

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
		X			X	X					X	X		X						

High 24 - 064 = .004
Most conc in Lockwood area due to Source C.

DATE 82 05 02 SUN

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
[illegible]-1200	.5-1	SW-VAR	
13-2400	[illegible]-2.5	SW-WSW	

Lifting at noon & early evening

BILLINGS SO2						
HOUR	061	062	063	064	065	066
3-900			X	X		X
13-1500			X	X		B
8-1200		C			X	

Light Southwesterly's all day. Wind switches to NNW — get readings at 065 - 8-1200

LAUREL SO2		
HOUR	014	015
8-1000	X	

Source A

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X			X	X					X	X		X						

High 24-063 = .015

DATE 82 05 03 MON

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
-1200	.6-1.5	SSW-VAR	
13-1700	2.5-4.5	SW-WSW	
18-2200	4-7.5	NNE	
23-2400	4	N	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
10-1100		X				
18-2200		X-B				
3-1400			X	X		
4-1100					X	X
17-1900					X -C	
23-2400					X	

FOR Conc in am. caused by buildup — B&C P.M for 062 — Source B · P.M. for 065 — Source C

LAUREL SO2		
HOUR	014	015
9-1000	X	
1700	X	
14-1700		X

Source: A

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X			X	X					X	X		X						

High 24 - 065 = .030

DATE 82 05 04 TUE

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-1700	2-8	NNW - WNW	
18-2000	3.5-5.5	W	
21-2400	1-2.5	WSW	

Unlimited mixing

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-300					X	
1600					X ← C	

STRONG WINDS - all day — Conc at 065 all caused by NNW winds — "C."

LAUREL SO2		
HOUR	014	015

[illegible] sites! Baseline - zero

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X			X	X					X	X		X						

High 24 - 065 = .012

DATE 82 05 05 WED

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-700	1-3	SSW-SW	
8-2100	2-6	W-WNW	
22-2400	1.5	SSW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
3-600			X			
2-600				X		
5-700					X	
2200			X			X

small buildup in am — then lifting occurs — light buildup at 2200 — Source B&C

LAUREL SO2		
HOUR	014	015
7-800	X	X

Source A

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X			X	X					X	X		X						

High 24 - 063 = .016

DATE 82 05 06 THUR

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-600	1.5-2.5	SSW	
7-2400	2-5.5	WNW	

Mix Ht. — Lifts at 0600

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-500			X	X	X	X

Buildup at sites in early a.m. SO2 dispersing with lifting.

LAUREL SO2		
HOUR	014	015

[illegible] sites! Baseline - zero

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	/	X			X	X					X	X		X						

High 24 - 063 = .011

DATE 82 05 07 FRI

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-200	1.5-2.5	NW	
3-900	.5-2	SSW-VAR	
10-1700	3-5	NNW	
18-2000	1-1.5	VAR	
21-2400	1.5-3.5	NW	

Gusty winds — Speeds FAST-SLOW-FAST-SLOW-FAST

BILLINGS SO2						
HOUR	061	062	063	064	065	066
2200		X				
7-900			X			
1900				X		
2,1800					X	
22-2300					X	

Spotty readings at all sites. Conc at 065 with winds out of NW-NNW — Source C

LAUREL SO2		
HOUR	014	015
4-1000	X	X
1800	X	X

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X			X	X					X	X		X	X	X	X	X	X	X

High 24 - 063 = .011
Note: High baseline = .009
065 is actually higher 24 = .007

DATE 82 05 08 SAT

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-900	1.5	SSW	
10-2200	2.5-6	ENE-NE	
23-24	3.5	N	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
10, 15-17		X				
7-900			X			
7-500				X		
9-10, 24					X	
17-22						X

Readings at 066 — w/NE winds Source C 2-HR Reading at 065 = .188 — N wind - Source C

LAUREL SO2		
HOUR	014	015

No Readings — Baseline —

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F6SI	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

High 24-066 = .011

DATE	82 05 09	SUN

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-200	2	NNW	
3-1300	2.5-3.5	N-NNE	
14-2100	1.5-3	NNW	
22-2400	1.5	WNW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-200					x	
14-2300					x	

All conc at 065 with NNW-N wind
Source C

LAUREL SO_2		
HOUR	014	015

No Readings –
Baseline.

High 24-065 = .027

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cox	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen Cm	Cen CP	Cen AH	Cen SP	Cen FC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

DATE	82 05 10	MON

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-1000	.5-2	NW-SW VAR	
11-1900	2.5-4.5	NNW-NNE	
20-2400	2-3	NE-E	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
5,14-15		(X)+B				
10-1700					X	
8-900						(X)-B
2000						(X)-C

Conc at 065 due to NNE-NNW winds
Source: C

LAUREL SO_2		
HOUR	014	015

No conc: –
Baseline.

High 24-065 = .018

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cox	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen Cm	Cen CP	Cen AH	Cen SP	Cen FC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

DATE	82 05 11	TUE

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-500	.4-2	ESE	
6-1200	1-2.5	ENE	
13-1500	2-3	SE-E	
16-2400	.2-1	VAR	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
7-1100		(X) B&C				(X)-C
19-2200			X			
10-1100					(X)-C	

Conc at 062, 065, 066 – W/ ENE wind.

LAUREL SO_2		
HOUR	014	015

No Conc –
Baseline

High 24-063 = .010

Note: High
baseline of ≈ .008
for site 063

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cox	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen Cm	Cen CP	Cen AH	Cen SP	Cen FC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

DATE	82 05 12	WED

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-900	.2-2	SSW	
10-1300	2-3.5	W	
14-1900	2-4	WNW	
20-2400	.7-1.5	SSW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-1100			x			
5-1000				x		
600				x		
14-1600					x	
7-900						B(X)

Source – mostly C at 063, 064, 065

LAUREL SO_2		
HOUR	014	015
8-900	x	
9-1000		x

Source A

High 24-063 = .019

Baseline of 063
≅ .009

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cox	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen Cm	Cen CP	Cen AH	Cen SP	Cen FC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

DATE	82 05 13	THUR

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-800	.5-1.5	SSW	
9-1300	2-3.5	NW	
14-2100	2.5-5.5	ENE-N	
22-2400	.4-.8	SSW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
14-1500		x				
3-800			x	x		x
3-500					(X)-B	
10-1400					X	
1700					(X)-C	

Conc in am due to buildup – Source B&C
Conc in p.m at 065 – Due to Source C

LAUREL SO_2		
HOUR	014	015
800	X	

2-HR conc –
Source A

High 24-065 = .014

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cox	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen Cm	Cen CP	Cen AH	Cen SP	Cen FC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

DATE	82 05 14	FRI

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-900	.5-1.5	SSW-WSW	
10-1500	2-5	E-NE	
16-2400	1-5	ESE-SE	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
9-1400		x				
7-1000			x	x	x	
12-1400					x	
7-1100						x

Conc in a.m. due to buildup in calm winds – Source B&C

LAUREL SO_2		
HOUR	014	015
7-1000	x	
8-900		x

Buildup
Source: A

High 24-063 = .014

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cox	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen Cm	Cen CP	Cen AH	Cen SP	Cen FC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

DATE	82 05 15	SAT

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-1000	.2-1.2	SSW-S	
11-1400	1-2.5	WNW	
15-1800	1.5	SW	
19-2200	1.5-3	NE	
23-2400	.3	VAR	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
7-1000			x	x		
15-1700			x	x		
7-1100					x	
14-1700					x	
8-900						(X)-B

Buildups occur with calm – SW – winds.
Source is mostly C

LAUREL SO_2		
HOUR	014	015
900	X	

Source A –

High 24-063 = .017

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cox	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen Cm	Cen CP	Cen AH	Cen SP	Cen FC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

DATE	82 05 16	SUN

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-900	.2-1	VAR	
10-1700	1-3.5	ENE	
18-2200	1.5-4	E-SE	
23-2400	.5	S	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
10-1400		(X)-B				
9-1200					(X)-C	
500						x

Source for 062 = B – "Conoco" – (BS)
Source for 065 = C

LAUREL SO_2		
HOUR	014	015

No Conc.
Baseline.

High 24-065 = .010

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cox	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen Cm	Cen CP	Cen AH	Cen SP	Cen FC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

Table 81

DATE	82 05 17	MON

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	NNE-E	
		[illegible]	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1700 5-1400 2300		X	X	X	X	X

Conc at 063, 064, 065 due to Buildup under calm - SW winds - Source - mostly C

LAUREL SO2		
HOUR	014	015
900 7-1000	X	X

Buildup - Source A

High 24 - 063 = .013

MPCo	CON BP	CON FC	GT WT	EX CAT	EX COX	EX F2	EX F3	EX F3R	EX F5	EX F651	EX F700	MT SUL	CEN #3	CEN #4	CEN #5	CEN CM	CEN CP	CEN AH	CEN SP	CEN FC
	X	X			X	X						X	X	X	X	X	X	X	X	X

DATE	82 05 18	TUE

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
[illegible]	.8 3.5	ENE	
[illegible]	2.5-5.5	ESE	
[illegible]	.5	SSW	
[illegible]	[illegible]-.5	N-NW	
[illegible]	[illegible]	S-SSW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
6-1400 900 700 20-2100 22-2400		(X) B&C	X	X	X (X)-C	X -C (X)-B

ENE wind in a.m. - until 1400 Source C hits 065, 066, 062 & sites in Laurel →

LAUREL SO2		
HOUR	014	015
8 1000 800 13-1400	X X	X X

Source: B & C from Billings

High 24 - 066 = .020

Conc at 063 & 064 at 7-800 due to calming & spreading of Source C although keeping ENE flow.

MPCo	CON BP	CON FC	GT WT	EX CAT	EX COX	EX F2	EX F3	EX F3R	EX F5	EX F651	EX F700	MT SUL	CEN #3	CEN #4	CEN #5	CEN CM	CEN CP	CEN AH	CEN SP	CEN FC
	X	X			X	X						X	X	X	X	X	X	X	X	X

DATE	82 05 19	WED

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
[illegible]-700	-3	[illegible] NE	
8-[illegible]	2-2.5	N-NW	
[illegible]-500	.5	WSW	
16-2400	.7-1.5	S-VAR	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
4-500 6-800 23-2400 2, 500		X			(X)-C (X)-B	(X)-C

High 24 HR. Conc of .130 at 065 caused by Source C - North wind.

LAUREL SO2		
HOUR	014	015
12-1300	X	

Source A - Small amount

High 24 - 065 = .010

MPCo	CON BP	CON FC	GT WT	EX CAT	EX COX	EX F2	EX F3	EX F3R	EX F5	EX F651	EX F700	MT SUL	CEN #3	CEN #4	CEN #5	CEN CM	CEN CP	CEN AH	CEN SP	CEN FC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

DATE	82 05 20	THUR

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-900	1-2	SW	
10-1600	2-4	NNW-N	
17-1800	3.5-4.5	ENE	
19-2200	2-3.5	SE	
23-2400	.5	SSW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
9, 13-17 700 5-800 4-700 10-1700 2-900		X), (X) A B	X B&C	X	(X)-B (X)-C	B & A? (X)

Conc at 062 - 900 is From Source A - Laurel

LAUREL SO2		
HOUR	014	015
400 800	X X	X

Source A - Note lag time 2hr LRL → BLG

High 24 - 065 = .023

Note HR 13-1700 at 062 & 065

Five-HR-Ave:

062 = .023 "Conoco"

065 = .060 "Source C"

Wind out of N.

SS

MPCo	CON BP	CON FC	GT WT	EX CAT	EX COX	EX F2	EX F3	EX F3R	EX F5	EX F651	EX F700	MT SUL	CEN #3	CEN #4	CEN #5	CEN CM	CEN CP	CEN AH	CEN SP	CEN FC
	/	X			X	X					X	X	X	X	X	X	X	X	X	X

DATE	82 05 21	FRI

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-700	1-1.5	SSW-S	
8-1500	2-3	WSW	
16-2400	1.5-4	ENE	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
7-900 17, 2400 5-1500 5-1100 5-900		X X	X	X	X	X

Conc occuring at all sites at same time 5-1200 Later at 063 & 064 - Inversion Breakup - Source B&C

LAUREL SO2		
HOUR	014	015
10-1300 7-1300	X	X

Source A. Inversion breakup.

High 24 - 063 = .022

MPCo	CON BP	CON FC	GT WT	EX CAT	EX COX	EX F2	EX F3	EX F3R	EX F5	EX F651	EX F700	MT SUL	CEN #3	CEN #4	CEN #5	CEN CM	CEN CP	CEN AH	CEN SP	CEN FC
	/	X			X	X					X	X	X	X	X	X	X	X	X	X

DATE	82 05 22	SAT

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-1000	.2-1	VAR	
11-2100	1-6	ENE-E	
22-2400	.4-2	SSW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
100 9-1400 19-2200 6-1200 19, 24		X (X)-B&C (X) C?	(X B&C	X	X C X (X)-C	X) X)

Conc, at all sites between 6-1200 - Inversion breakup, Source B&C.

LAUREL SO2		
HOUR	014	015
7-1200 8-1200 100	X (X) B&C	X

Reading at 100 from Billings -

High 24 - 065 = .024

& - 063 = .024

Note: Reading at 100 seen at 066, 065, 062 & 014 - from Source C.

MPCo	CON BP	CON FC	GT WT	EX CAT	EX COX	EX F2	EX F3	EX F3R	EX F5	EX F651	EX F700	MT SUL	CEN #3	CEN #4	CEN #5	CEN CM	CEN CP	CEN AH	CEN SP	CEN FC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

DATE	82 05 23	SUN

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-700	.3-1.4	SW	
8-1200	2-5.5	NW	
13-1600	2-7	NNE-N	
17-2400	.3-2	S	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
13-1600 3-600 1800 100 12-1600		(X) B	(X) C	X	X (X)-C	

Note: Hours 1-400 at 062 - "Conoco" - Ave = .104

Hours 1-400 at 065 - "Source C" - Ave = .034

LAUREL SO2		
HOUR	014	015
1-200 1700	X	X X

Source: A

High 24 - 062 = .019

MPCo	CON BP	CON FC	GT WT	EX CAT	EX COX	EX F2	EX F3	EX F3R	EX F5	EX F651	EX F700	MT SUL	CEN #3	CEN #4	CEN #5	CEN CM	CEN CP	CEN AH	CEN SP	CEN FC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

DATE	82 05 24	MON

METEOROLOGY			
HOUR	W.S.	W.D	MIX HT
1-800	.4-2.8	SSW	
9-1800	3.5-4.5	NNW	
19-2000	2-3.5	NE-E	
21-2400	.1-.7	S	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
4, 800 17-2000 1-900 3-800 10-1800		(X)-B&C (X) B	(X	B&C X	X) (X)-C	

Conc at all sites from 1-900 - Inversion buildup. Source B&C. Conc in p.m. more directional - N-NNW winds

LAUREL SO2		
HOUR	014	015
2, 3, 800 2-800	X	X

Inversion buildup - Source: A

High 24 - 065 = .024

Conc at 062 from 17-2000 - Source B

Conc at 065 from 10-1800 - Source C

MPCo	CON BP	CON FC	GT WT	EX CAT	EX COX	EX F2	EX F3	EX F3R	EX F5	EX F651	EX F700	MT SUL	CEN #3	CEN #4	CEN #5	CEN CM	CEN CP	CEN AH	CEN SP	CEN FC
	/	X			X	X					X	X	X	X	X	X	X	X	X	X

Table 82

Table 83

DATE 82 05 25 TUE

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-1000 11-1400 15-2000 21-2400	.2-1.3 2-3 2-3.7 .6-1	SSW ENE SE SSW-S		5-1000 2300 7-1200			X	X X	X	X	8-400 7-900	X	X
				Inversion Breakup - All sites in a.m. Source: B&C							Inversion breakup Source: A		

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	CenSP	CenFC
	/	/			X	X					X	X	/	X	X	X	X	X	X	X

High 24-063 = .017

DATE 820526 WED

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-700 8-1600 17-2000 21-2400	.2-.5 3-6 5-7.5 .4-1	SW-SE ENE-ESE NE-NW SSW		4-800 7-800 2300 6-700 18-2100			X	X X	X X	X			
				Readings in a.m. due to inversion breakup, B&C Readings at 065 from 18-2100 due to "C" - N winds							No Readings - Baseline.		

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	CenSP	CenFC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

HIGH 24 - 065 = .010
& 063 = .010

DATE 82 05 27 THUR

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-200 3-1900 20-2300 2400	1 3.5-5.5 1.5-4 1.3	VAR ENE-NNE NW-NNW WSW		400 15-1600 19-2200 6, 1400					X (X X) C	X	1100	X	X
				Conc at 065 in p.m. due to Source C. Winds are out of N.							Small elevated readings from B&C - Billings.		

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	CenSP	CenFC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

HIGH 24 - 065 = .009

DATE 82 05 28 FRI

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-2400	2-7.7	WNW, NW, W		23-2400 8-1300			X-C		(X) C	(X)-B			
W-NW winds all day. Faster speeds in p.m.				Conc at 063 & 065 due to Source C. Conc at 066 - Source B.							No Readings - Baseline.		

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	CenSP	CenFC
	X	X			X	X					X	X	X	X	X	X	X	X	X	X

High 24 - 065 = .013
& 063 = .013

DATE 82 05 29 SAT

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-1100 12-2200 23-2400	2.5-7.4 2-7.8 .8-1.1	W-WSW WNW-W S		1-800 2300 5-700 18-1900 1-200			(X)← B&C X	(X) B&C	(X)-B (X)-C	(X)-B	6-700		X
				Conc at 065 & 066 in a.m. due to Source B. Conc at 065 at 18-1900 due to Source C.							Source: A.		

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	CenSP	CenFC
	X	X		X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 - 063 = .029

DATE 82 05 30 SUN

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-700 8-2100 22-2400	.1-1.8 1.5-6 .7	SSW-SW NNW-NW & N SSW		10-2100 3-600					(X)-C	(X)-B	500	X	
				Conc at 065 - Winds out of N - Source C. Conc at 066 - Winds out of SW - Source B.							Source A - 2HR Reading.		

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAll	CenSP	CenFC
	X	X		X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 - 065 = .044

12-HOUR conc. at 065 - 10-2100 = .086 - All from source C.

DATE 82 05 31 MON

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-1000 11-1600 17-1900 20-24	.5-1 1.3-3.6 3.5-4.0 2.5-3.5	SW-SW ENE-E ESE ENE		7-1000 6-1100 6, 1000			X	X	X	X	8-1000 9-1000	X	X
				Inversion breakup. All sites have conc in a.m.							Source A.		

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCm	CenCP	CenAH	CenSP	CenFC
	X	X		X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 - 064 = .033

Most conc. are from source C in Billings. High conc at 064 & low at 066. Not much influence from B.

DATE	82 08 01	SUN

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
[illegible]	[illegible]	[illegible]		8-1000 13, 18-19 2200 3-1300 18-19		X B&C	X X	X X	A&C X	X X	[illegible] 1600 22-2400		X X X

Inversion breakup. All sites in a.m. [illegible] 064 & 066 start at 300. "Mostly source C" [illegible]

Source - A

High 24 - 064 = .032

Conc in pm - at 062, 065, & 066 caused by E wind. Source C mostly, some B at 062.

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	CEN#3	CEN#4	CEN#5	CENCM	CENCP	CENAH	CenSP	CENFC
	X	X		X	X	X						/	X	X	X	X	X	X	X	X

DATE	82 08 02	MON

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
[illegible]	.5-.8 1.8-4.5 2-4 .8-1.3 .5-.8	WSW W-NW ENE N SW		300 1-300 8-1400 16-1900 23-2400			X A,B,C		A&C X (X)	X X C (X) B	1-300 600		X X A

Conc at 1-300 occur at some time of conc in Laurel. Could be from Source A.

High 24 - 065 = .014

Changes of wind direction bring SO2 from Sources B&C on 066 & 065.

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	CEN#3	CEN#4	CEN#5	CENCM	CENCP	CENAH	CenSP	CENFC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE	82 08 03	TUE

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-1000 1100 12-1400 15-2400	.8-4 1.2 1-3 2.7-6.2	SSW-SW NNW WSW NW-N		8-1400 6-1400 8-1300 15-1900 3-900 12, 22-23			X	X	B&C X (X) C	X X, (X) B	8-1400		(X) A

Inversion Breakup - Conc occur at all sites in a.m. Conc at 065 from 15-1900 from C

Source: A.

High 24 - 065 = .053

Conc at 066 from 22-2300 from B.

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	CEN#3	CEN#4	CEN#5	CENCM	CENCP	CENAH	CenSP	CENFC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE	82 08 04	WED

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-600 7-1000 11-1400 15-2200 23-2400	1-2.5 1-1.5 1.5 2-4 1-1.5	NNE SW SSE NE-ENE SW		4-1300 11, 2400 8, 9, 12-14 17-18 5, 6, 19-21 8-16			X B&C	X, X B&C	B&C (X) (X) C	(X)-C (X)-B	8-1100		X

Sources B&C hitting sites at different times of day depending on wind direction.

Source: A

High 24 - 065 = .029

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	CEN#3	CEN#4	CEN#5	CENCM	CENCP	CENAH	CenSP	CENFC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE	82 08 05	THUR

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-1300 14-2400	1-1.8 2.2-4.2	SW-S ENE-NE		7-1300 1-300 8-1600 5-1500 20-2400			X B&C	X X	(X)-B&C (X) B&C	(X)-B&C (X)-C	8-1200 1600		(X) A (X) B&C

Buildup in early a.m. at 064 & 065. Then lifting & then breakup later at all sites, Sources B&C

Afternoon reading from Billings.

High 24 - 065 = .057

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	CEN#3	CEN#4	CEN#5	CENCM	CENCP	CENAH	CenSP	CENFC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE	82 08 06	FRI

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-1400 15-1800 19-2000 21-2400	1-1.8 1.8-2.8 2.5-3 .3-.8	WSW-SW NNW ENE SSW		7-1100 3, 7-1200 1, 7-1200 14, 15, 18 17, 19-20 23-24			X B&C	X	X X	B&C X (X)-C (X)-B	7-1300		X

Conc. at all sites in a.m. due to inversion breakup. Sources B&C.

Source: A - Breakup

High 24 - 064 = .039

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	CEN#3	CEN#4	CEN#5	CENCM	CENCP	CENAH	CenSP	CENFC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE	82 08 07	SAT

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-900 10-2400	.6-1 3.5-5.7	SSW ENE-NE		8-900 7-900 1-300 10-1400 18-19, 22-24			X	X B&C	X	X C-(X X X)	8-1000 17-2400		(X) A (X) B&C

Inversion breakup at all sites 7-900 Buildup at 066 - 1-300. Source C at 066 10-2400

015 influenced by A, B&C.

High 24 - 066 = .035

Note: MPCo ON for part of day.

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	CEN#3	CEN#4	CEN#5	CENCM	CENCP	CENAH	CenSP	CENFC
/	/	/		X	X	X						X	X	X	X	X	X	X	X	X

DATE	82 08 08	SUN

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	MIX HT	HOUR	061	062	063	064	065	066	HOUR	014	015
1-2400	2.5-5.5	ENE-E		10, 1200 1-1200 16-2300					(X) C	X X C	1-600		X B&C

Steady ENE winds all day.

Source: C STRONG ENE wind brings C to 066 and on to Laurel (a bit)

Looks like a little bit from Blgs. Good mix

High 24 - 066 = .065

Note: Site 064 is baseline.

MPCo	ConBP	ConFC	GtWt	ExCAT	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF651	ExF700	MTSul	CEN#3	CEN#4	CEN#5	CENCM	CENCP	CENAH	CenSP	CENFC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

Table 84

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	Mix Ht	HOUR	061	062	063	064	065	066	HOUR	014	015
1-500 6-700 8-2400	1-3 1.5-2 2.5-5	ESE-ENE NNE ENE-NE		700 8-2400					X C	X)	14-2100		(X) B&C

Source C. Conc are all from C.

Conc in pm caused by B&C. ENE winds

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE 82 08 09 MON

High 24-066 = .037

Site 064 is base line.

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	Mix Ht	HOUR	061	062	063	064	065	066	HOUR	014	015
1-300 4-600 7-2400	1.5-3 .7 .5-5.3	ENE VAR ESE-SE		900 2400 9-1100 7-900 4-500, 800		mostly C	X X	X X	X	X	2-400 8-1000		X) (X) A or (BC)

Wind speed slows up from previous day. SO2 starts to buildup at 066 & above then breaks up.

Conc from 2-400 from Billings - Lift to mixing - then break from 8-1000.

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE 82 08 10 TUE

High 24-064 = .013

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	Mix Ht	HOUR	061	062	063	064	065	066	HOUR	014	015
1-300 4-500 6-1700 18-2200 23-2400	.5-1 1 1-4.5 2-3 3-5	SW-VAR E ENE-NE WSW-VAR N-NW		[illegible] 1100 23-2400 1-300 20-2200 7-1100 13, 16, 17, 21-24		(X) B&C (X) B	(X X C	X X)	X) C X	(X) C	6-1800 19-2400		(X) B&C (X) A

Same pattern at 062 & 066 with ENE-E winds - Site 062 also has B. - Double effect - High 24.

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE 82 08 11 WED

High 24-062 = .032

Note! Strong SO2 emissions from Source C. Higher windspeeds mix slightly.

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	Mix Ht	HOUR	061	062	063	064	065	066	HOUR	014	015
1-500 6-1200 11-1500 16-1700 18-2400	1-2 1-1.5 1.5-2.5 2.5 2-4	W-WNW WSW-VAR S-SW W-NW ENE		18, 22-24 11-1300 10-1500 1, 4, 9-11 17-18 19, 23-24		(X) B&C	X	X	X (X) C	(X) C	8-900 12-1400 2300		(X) A (X) (X) B&C

Breakup occuring at 063, 064, 065 from 9-1500. Scattered hours - direction dependent from C

Source: Mostly A Some B&C in evening

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	X						X	X	X	X	X	X	X	X	

DATE 82 08 12 THUR

High 24-065 = .016

No FCC - [illegible]

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	Mix Ht	HOUR	061	062	063	064	065	066	HOUR	014	015
1-400 5-1400 15-2000 21-2400	1-2 .5-1.5 1.5-2.5 1	ENE-E SSW-SW ENE SSW-VAR		2-1000 16-2200 2-1400 7-1700 1-1200 15-1400		(X) B&C	(X	B&C X	X)	X (X) C	8-1300		X

Inversion breakup at 063, 064 & 065 - 8-1500. Conc at 062 - hit first with ENE winds then slash back

Source: A - Inversion Breakup.

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE 82 08 13 FRI

High 24-064 = .043

Site 066 at or near inversion level in a.m. Conc in p.m. due to C. "Mostly C influence on this day." (59)

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	Mix Ht	HOUR	061	062	063	064	065	066	HOUR	014	015
1-1100 12-2100 22-2400	.7-1.5 1-3.7 2-2.5	S-SSW W-NW NE-VAR		7-1100 22, 24 1-1200 16-1800 21-2400 22, 24		X X	(X	B&C X	X (X) C	X (X) C	9-1200 2000		X X

Surface based inversion - Buildup of SO2 at ground level at 062, 063, 064, 065, 066.

Source A - Breakup.

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE 82 08 14 SAT

High 24-064 = .039

Conc at 065 later in day - with N winds - Source C.

Lots of SO2 in Lockwood area. Source C - major contributor.

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	Mix Ht	HOUR	061	062	063	064	065	066	HOUR	014	015
1-1800 19-2400	1-5 1-2	ENE-NE-N ESE-E & VAR		7-1100 13-17, 19, 24 20-2400 1-3, 10-16 18, 23-24 4-11, 13-14		(X X) B&C.		(X) C	C (X X)	(X) C	8-900 1700		(X X) B&C

ENE winds most of day - Source C hits 062, 065 & 066. Wind shift to SW & slows - Hits 064

ENE winds - Billings sources

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE 82 08 15 SUN

High 24-065 = .036

METEOROLOGY				BILLINGS SO2							LAUREL SO2		
HOUR	W.S.	W.D	Mix Ht	HOUR	061	062	063	064	065	066	HOUR	014	015
100 2-1300 14-1600 17-2100 22-2400	2.6 .5-2 2.5-3 1-4 1.5-3	ENE S-SW ENE ESE NNE		1-400 8-1000 7-1200 14-1600 4-500 23-2400	B&C	X (X X (X) B	X X	X	X X) X	X X X	9-1100		X

Conc at 1-400 - buildup at 062, 065, 066 then lifting then breakup 7-1200 at 062, 063, 064, 065

Source: A Breakup.

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE 82 08 [illegible] MON

High 24-064 = .018 & -065 = .018

Conc at 062 & 066 from 14-1600 show influence from C.

Table 85

DATE 82 08 17 TUE

High 24-066=.042

Buildup again at 066 at 22-24. Note 1-HR conc at 065 with N wind at 2100 - Source C.

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
[illegible]	2-2.5	[illegible]	
[illegible] 2000	[illegible]	[illegible]	
[illegible] 2200	3.5 - 4.5	[illegible] NE	
23-2400	[illegible] 2	[illegible]	

BILLINGS SO2

HOUR	061	062	063	064	065	066
[illegible], [illegible] 21		X				
8-1100			X			
13, 6, 24				X		
4-5, 8-15					X X	
21, 24						
[illegible] 22-24						X, X

Wind shows buildup at 062 & 066 then lifting — then breakup at 063, 064, & 066.

LAUREL SO2

HOUR	014	015
8-1300		X

Inversion breakup Source A.

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	\						X	X	X	X	X	X	X	X	X

DATE 82 08 18 WED

High 24-064=.047

→ afternoon conc to 062 & 066

Buildup occurs again after 1800 at 064, 065, & 066.

Source: Mostly C

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-1300	.8-2	SW-SW	
14-1800	2-3.5	NE	
19-2400	1-1.7	SW	

BILLINGS SO2

HOUR	061	062	063	064	065	066
7-1200			X		X	X
-1200				X		
18-2400				X	X	X
14-1500		X				X
[illegible]00						X

Buildup at 064 & above with SW drift. Breakup at all sites 7-1200. Faster E & SE winds bring —

LAUREL SO2

HOUR	014	015
13-1600		X

Breakup - Source A → →

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE 82 08 19 THUR

High 24-064=.029

& - 065=.029

Winds shift back to SW in the evening Note buildup at 064, 065, 066.

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-1100	.8-2	SSW-SW	
12-1800	3-4	ENE	
19-2400	.4-1.5	SW-S	

BILLINGS SO2

HOUR	061	062	063	064	065	066
8-1100		X	X			
12-1800		X				X
5-1100				X		
20-2200	—	—	—	X	X	
14-1500					X	
19-2300						X

Inversion breakup from 5-1100 - All sites - Source B&C

Wind shift ENE at 1200-1800 - Hits 062, 065, 066 - Source [illegible]

LAUREL SO2

HOUR	014	015
11-1200		X

Source A' Breakup.

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE 82 08 20 FRI

High 24-066=.059

Reading at 065 at 1800 - NW wind! Source C

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-1300	.6-1.5	SSW-SW	
14-1700	2.5-3.5	ENE	
18-1900	2	NW	
20-2200	1.5-4	NE-E	
23-2400	.6-1.7	S	

BILLINGS SO2

HOUR	061	062	063	064	065	066
7-2300		(X)				
5-1300		B&C	X		C	
6-1300				X		
4-15, 18					X, (X)	
1-16, 21-22						X, X

Breakup at all sites from 5-1300 - Sources B&C

Wind shift to ENE. SO_2 at 062 - Source B&C & at 066 - "C"

LAUREL SO2

HOUR	014	015
11-1200		X
1800		X

Breakup - Source A

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE 82 08 21 SUN

High 24-065=.020

Faster SW winds don't allow SO_2 to buildup in a.m.

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-1200	1-2.5	SSW-W	
13-1600	1.7-3.6	NNW-N	
17-2100	2-5	ENE-E	
22-2400	1.-1.5	SSE	

BILLINGS SO2

HOUR	061	062	063	064	065	066
14-15, 17-20		X, (X)				
1-4, 7, 9-12		B B&C	(X)		B C	
1-12, 23			B&C	(X)	(X), (X)	B C
4-7, 11-16						
3-12, 17-18						(X), (X)

Faster SW winds bringing plumes down. Not breakup.

Sources B&C both effecting sites at different times

LAUREL SO2

HOUR	014	015
5, 7-900		(X)
1200		X
18-1900		(X) B&C

Note! ENE winds bring SO_2 in aft.

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X		X	X	X						/	X	X	X	X	X	X	X	X

DATE 82 08 [illegible] MON

High 24 - 066=.028

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-1300	.6-3	W-WSW	
14-2100	3-7	NE-ENE	
22-2400	.2-1	SE	

BILLINGS SO2

HOUR	061	062	063	064	065	066
15-16, 18-21		[illegible]			B&C	
8-1200		B&C	(X	X	X	
1-1100						
4-800						X
14-2200						X C

Buildup at 064, 065, 066 in a.m. Some breakup & lifting. Wind shift to ENE. SO_2 at 062 & 066

LAUREL SO2

HOUR	014	015
8-1200		X

Source: A Breakup.

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	/	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE 82 08 23 TUE

High 24-066=.035

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-200	.5	S	
3-500	.6	E-NNE	
6-1400	.8-2	SSW	
15-2100	2-6.7	ENE-NE	
22-2400	.4-1	SW	

BILLINGS SO2

HOUR	061	062	063	064	065	066
9-10, 14-15		X				
8-1300			X			
3-800				X		C
6-1400					X	
5-15, 17-21						X, (X)

Buildup followed by breakup. Sources B&C

Wind shift to ENE causes C to go to 066.

LAUREL SO2

HOUR	014	015
9-1400		X

Source A. Breakup.

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X		X	X	X						X	X	X	X	X	X	X	X	X

DATE 82 08 24 WED

High 24-064=.026

& 066=.026

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-2400	.7-2	SSW-SW	

Southwesterly's all day.

BILLINGS SO2

HOUR	061	062	063	064	065	066
8-16, 24			X			
8-14, 17, 19				X		
22-2400				X		X
7-1400					X	X
16-1800						(X) B

Inversion breakup at all sites / Source B&C.

Plume impaction at 066 16-1800 from B.

LAUREL SO2

HOUR	014	015
8-1400		X
2400		X

Inversion breakup.

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cor	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X		X	X	X						X	X	X	X	X	X	X	X	X

Table 86

DATE	82 08 25	THUR

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-1000	.5-1.5	SSW-SW	
11-1200	3-4	NW-W	
13-1500	1.5	SW	
16-1900	1.5-2.5	SE	
20-2400	3-5	NE	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
7-1500			X			
1-2, 7-12				X		
15-1600				X		
1-4, 10-17					X	
7-16, 21-24						X, (X) C
Buildup in Lockwood area at 063 & 064 from 1-400 Lifting & then breakup from 7-1700. Source B&C						

LAUREL SO2		
HOUR	014	015
9-1300		X
Breakup Source A.		

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X		X	X	X						X	X	X	X	X	X	X	X	X

High-24 066=.031

Note! Site 066 hit directly by C from 21-2400.

DATE	82 08 26	FRI

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
100	2	NE	
2-800	.7-1.3	SSW-VAR	
9-2400	4-8	ENE-NE	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
13-2400		(X) B&C		J&C		
1-800			X			
8-900				X	X	
1-2, 8-9						
13-18, 22-24						(X) (X)
Breakup 7-1000. Strong winds from ENE cause SO2 impact on 062: B&C and 066: C.						

LAUREL SO2		
HOUR	014	015
9-1100		X
Breakup Source A		

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

High 24-066=.035

DATE	82 08 27	SAT

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-300	2-3.6	NE-NNW	
4-1300	.4-1.7	SSW-SW	
14-1600	1-2.5	NE	
17-2400	1-2.5	SW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1, 9-16, 21-22		X				
7-1200			X			
7-1400				X	X	
18-2000				X		
1, 20-21					X	
1, 7-10, 13-17, 20-21						X
Readings at 062 & 066 at 100 due to C. Inversion breakup from 7-1400. Some buildup in evening 18-2100.						

LAUREL SO2		
HOUR	014	015
10-1200	X	
1900		X
Inversion breakup.		

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X		X	X	X						X	X	X	X	X	X	X	X	X

High24-066=.032

DATE	82 08 28	SUN

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-1300	.7-1.1	SSW-SW	
14-1700	2-3.5	ENE	
18-2400	.7-1.2	SSW-SW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
8-1100		X				
3-1300			X	X		
3-1400					X	
1-1800						X
20-2300						X
Buildup at 066 in early a.m. 1-1000 Breakup at all sites 3-1400.						

LAUREL SO2		
HOUR	014	015
10-1100		X
16-1900	B&C —	(X)
2200		X
Conc. from 16-1900 from Billings. Rest "A"		

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

High 24-066=.061

ENE winds from 14-1800 cause conc. at 062 & 066

Buildup occurs again at 066 from 20-2300

DATE	82 08 29	MON

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-900	.6-1.5	SSW	
10-2000	2-3.5	ENE-NE	
21-2200	1	SW	
23-2400	1.5-5	NNW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
11-1700		X				
2-400			X	X		
1-600						
13-1400					X	X
8-9, 20-24					X	
10-14, 19					X	X
Ground level buildup at 063, 064, 065, 066 followed by wind shift hitting 062 & 066.						

LAUREL SO2		
HOUR	014	015
14-1500		X
Source : B&C. from Billings		

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

High 24-065=.026

Wind shifts to NNW at 23-2400 & high conc are seen at 065 due to C.

DATE	82 08 30	TUE

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-400	.3-1.8	WSW	
5-800	.9-1.9	NE-VAR	
9-1300	1-1.8	SW-WSW	
14-1600	1.5-3	NW-N	
17-2400	.7-2	SSW-SW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
7-10, 16-17		X				
7-1100			X			
8-10, 18-22				X		
8-11, 15-18					X	
1-13, 16-18, 23-24						X
Breakup at all sites 7-1100. Earlier at 066. Afternoon N winds cause SO2 at 062, 065 & 066						

LAUREL SO2		
HOUR	014	015
10-1100		X
Breakup Source A.		

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

High 24-066=.031

Buildup again at 23-2400 at 066.

DATE	82 08 31	WED

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-1300	.8-2.8	SSW-SW	
14-1900	2.5-3.5	NW-NNW	
20-2400	.5-1	WSW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
8-1300			X	X		
8-1900					X	
1-1400						X
20-21, 24						X
Breakup at 063, 064, 065, 066 — 8-1300. NW wind effect at 065 14-1900 due to C.						

LAUREL SO2		
HOUR	014	015
8-1300		X
Breakup Source A		

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3A	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
	X	X		X	X	X						X	X	X	X	X	X	X	X	X

High 24-066=.037

Buildup at 066 in early morning & late evening.

Table 87

DATE	81 11 01	SUN

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	SW	
[illegible]	[illegible]	[illegible]-S	

[illegible]

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-9, 18-23 1-2400 [illegible] [illegible]		X A	X AB&C	X	X	B&A X

Southwesterly's all day. Source areas are added in as you go east.

LAUREL SO2		
HOUR	014	015
1-1500 17, 22		X X A

Source: A

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-066=.071

Note: Laurel's SO2 is seen in Billings.

DATE	81 [illegible]	MON

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
[illegible]	[illegible]	[illegible]-S	
[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	SSW	
[illegible]	[illegible]	WSW	
[illegible]	[illegible]-2	[illegible]	

[illegible] day.

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-500 1-2400 1-[illegible], 21-24 1-19, 18-24			X B&C	X	X	X X

Looks like a some buildup - breakup with constant SW flow - brings plumes down

LAUREL SO2		
HOUR	014	015
[illegible] 11-1800 23-2400		X X X A

[illegible] like breakup at mid day. "A"

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-066 = .105

Source A may be impacting in Billings but can't see at 062.

SW flow causes conc. all hours at 063, 064, 065, 066.

DATE	81 11 03	TUE

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-1300	1.5-2.5	SSW-S	
14-1700	1.6-2.9	SSW	
18-2400	1.3-1.7	SSW-S	

[illegible] at noon.

BILLINGS SO2						
HOUR	061	062	063	064	065	066
8-12, 17-19 1-19, 22-24 1-17, 17-24 2, 6-15, 17-24 1-13, 17-24		X	X	X	X	X

Buildup / Breakup / Buildup. with SW flow Source B&C mostly with some A.

LAUREL SO2		
HOUR	014	015
9-1700 2200		X X

Breakup - 9-1700 from Source A.

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-066 = .132

Conc. at 062 from 17-1900 is probably from Laurel. Approx. 3 hr. travel time at 2 m/sec.

DATE	81 11 04	WED

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-1200	1-1.6	SSW-SW	
13-2200	1.6-5.8	ENE-NE	
23-2400	.8-1.5	SSW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
11-1500 1-1200 1900 5-900 13-2100		X	X X	X	B&C X	X X C

Ground level buildup in early a.m. followed by breakup. Wind shift to ENE came C to come to 061

LAUREL SO2		
HOUR	014	015
10-12		X

Breakup - Source A

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-066 = .055

DATE	81 11 05	THUR

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
100	1.2	WSW	
2-700	.6-1.1	SSE-SE	
8-900	.6-.9	SSW	
10-2000	.6-1.2	VAR	
21-2400	.7-.9	SW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-12, 17 6-13, 17, 23-24 6-13, 16-17, 24 10-12, 16-17 4-6, 10-13, 15-18		X	X	X	B&C X	X

Breakup at 10-1300 at all sites. Scattered [illegible] due to variable calm winds

LAUREL SO2		
HOUR	014	015
12-1500		X

Breakup - Source A

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-065 = .027

DATE	81 11 06	FRI

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-2400	SSW-SSW	.9-3.5	

Faster wind speeds 12-1600 Southwesterly's all day.

BILLINGS SO2						
HOUR	061	062	063	064	065	066
10-1200 1-3, 10-18, 21-24 1, 10-14, 16-24 10-14, 17-24 2-6, 9-13, 17-24		X	X	X	B&C- X	(Some A) X

Buildup - early a.m., Breakup - mid day — Buildup - evening. SW flow all day.

LAUREL SO2		
HOUR	014	015
12-17 20-22		X X A

Breakup - mid day Buildup - evening

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-064 = .051

DATE	81 11 07	SAT

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-1000	1.1-1.7	SSW-S	
11-1700	2.2-6.3	NW-NNW	
18-2400	2.7-4.9	ENE-E	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
10, 19-21 1-1100 2400 13-1700 19-2000		X B&C	X	X X unexplained	B&C X C X	X X C

Ground level inversion contain SO_2 at 063, 064, 065 & 066 from 1-1100 until breakup.

LAUREL SO2		
HOUR	014	015
9-1100		X

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-065 = .053

Note: High conc. at 065 caused by Source C with N winds. Conc at 066 caused by C with ENE winds.

DATE	81 11 08	SUN

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-600	.6-2.9	ENE-ESE	
7-800	1	SSW-SW	
9-1000	1.7-2	ENE-E	
11-1900	1-2.4	SW-WSW	
20-2400	1.3-1.8	S	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1100 9-17, 23-24 9-15, 23-24 10-12, 22-24 1, 16, 20-24		X	X	X	X	X

Breakup from 8-1700 - All sites - Source B&C
Buildup 20-2400 - all sites - Source B&C

LAUREL SO2		
HOUR	014	015
200 10-1400 19-2400		X - see X X - A

200 reading from Billings
Rest - Source A

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-004 = .034

Table 88

DATE 81 11 09 MON

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-500	1.7-2.1	S	
6-800	2	SSW-SSE	
9-1800	1.4-4.6	SW-WSW	
19-2400	1.3-2	S-SSW	

BILLINGS SO_2

HOUR	061	062	063	064	065	066
700		X				
1-2400			X			
1-12, 15, 18-24				X	X	
1-15, 18-24		B&C				X

Containment of SO_2 in early a.m. followed by breakup. Buildup follows from 18-2400.

LAUREL SO_2

HOUR	014	015
3, 5-600		X
9-1700		X
2200	A	X

Light containment followed by breakup.

MPCo	ConBP	ConFC	GtWt	ExCat	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF6SI	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCM	CenCP	CenAH	CenSP	CenFC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-066 = .065

Site 063 & 066 continue to have readings between 13-1700 after breakup. SW winds bring C to 063 & B to 066.

DATE 81 11 10 TUE

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-2400	1.1-2.2	SSW SW & S	

South westerly's all day.

BILLINGS SO_2

HOUR	061	062	063	064	065	066
11-1300		X				
1-12, 22-24			X			
1-17, 22-24				X		
1-12, 21-24					X	
1-12, 17-18, 20-24						X

Containment/buildup followed by breakup. Buildup occurs again at late night Source B&C

LAUREL SO_2

HOUR	014	015
11, 18-23	X	
10-1600		X
18, 2200		X

Source A.

MPCo	ConBP	ConFC	GtWt	ExCat	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF6SI	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCM	CenCP	CenAH	CenSP	CenFC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-066 = .081

DATE 81 11 11 WED

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-1000	.9-2.1	SSW-S	
11-1800	1.3-3.4	WSW-W	
19-2400	1.4-2	S-SSW	

BILLINGS SO_2

HOUR	061	062	063	064	065	066
7-11, 20-23		X				
1-16, 20-24			X			
1-15, 20-24				X		
1-14, 20-24					X	
1-14, 19-24						X

Containment/buildup followed by breakup. Buildup occurs again at late night Source B&C

LAUREL SO_2

HOUR	014	015
9-1100	X	
18-2400	X	
10-1200		X
15-2200	A	X

Breakup 9-1200. Buildup – 18-2400

MPCo	ConBP	ConFC	GtWt	ExCat	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF6SI	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCM	CenCP	CenAH	CenSP	CenFC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-064 = .081

DATE 81 11 12 THUR

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-1000	.4-1.8	S-SSW	
11-2000	1.3-4.7	WSW-W	
21-2400	1.5-1.8	S	

BILLINGS SO_2

HOUR	061	062	063	064	065	066
18-2200		X			B&C	
1-2, 5, 8-13			X			
15, 17-18, 20-23			X			
1-2400				X		X
1-12, 15-23					X	

Containment followed by breakup followed by buildup. SW flow brings B&C down during day.

LAUREL SO_2

HOUR	014	015
2, 5, 9-10	X	
17-21, 24	X	
10-12, 14		X
14-19, 24		X

Source A.

MPCo	ConBP	ConFC	GtWt	ExCat	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF6SI	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCM	CenCP	CenAH	CenSP	CenFC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-066 = .071

DATE 81 11 13 FRI

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-500	1.2-1.9	SSW	
6-900	.8-1.7	VAR	
10-2000	1.6-3.8	ENE-E	
21-2400	.7-1.6	VAR	

BILLINGS SO_2

HOUR	061	062	063	064	065	066
1-14, 16-17, 21		X				
1-1000			X			
1-1100				X	X	
1-6, 9-11						X
14-17, 20-22						X

Containment followed by breakup (1-1100) followed by wind shift to ENE & E. 066 & 062 get hit with E wind

LAUREL SO_2

HOUR	014	015
100	X	X
5-600	X	X
15-1600		X
		B&C

Readings in a.m. from A.

MPCo	ConBP	ConFC	GtWt	ExCat	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF6SI	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCM	CenCP	CenAH	CenSP	CenFC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-066 = .032

Conc at 066 from 14-1700 and 20-2200 are from Source C. Conc. at 062 from 12-2100 are from B&C. Conc from Billings also get to Laurel.

DATE 81 11 14 SAT

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-600	.7-1.1	SSW-SW	
7-1200	.7-2.9	VAR	
13-1800	3-5.4	WNW	
19-2400	3-5.3	WSW-W	

BILLINGS SO_2

HOUR	061	062	063	064	065	066
8-1300		X				
10-13, 17, 19-24			X			
10-13, 21				X		
10-14, 21-23					X	
1-14, 19-23						X

Buildup at 066. Breakup at 8-1400. Wind shift to nnw & ene. See rises at 065&066-"C."

LAUREL SO_2

HOUR	014	015
11-1300	X	X

Breakup 11-1300 due to A

MPCo	ConBP	ConFC	GtWt	ExCat	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF6SI	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCM	CenCP	CenAH	CenSP	CenFC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-066 = .042

Note rise at 1100 at 065 with NNW wind, then wind shifts to ENE and 066 gets hit. Source C.

DATE 81 11 15 SUN

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-600	1.7-4.4	WSW-W	
7-1300	.9-1.8	SW-VAR	
14-1800	1.2-4	WSW-W	
19-2200	1-1.7	S	
23-2400	2.5	SW	

BILLINGS SO_2

HOUR	061	062	063	064	065	066
2-14, 16-17, 20-24			X – B&C			
2-3, 10-14, 17-18, 20-24				X		
2-3, 10-13, 17, 21-24					X	
2-2400					mostly B –	X

Faster SW-WSW winds bringing plumes down in early am at 063 & 066

LAUREL SO_2

HOUR	014	015
3, 10	X	
12-13, 19-20	X	
10-1800		X

Source A.

MPCo	ConBP	ConFC	GtWt	ExCat	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF6SI	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCM	CenCP	CenAH	CenSP	CenFC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-063 = .037

DATE 81 11 16 MON

METEOROLOGY

HOUR	W.S.	W.D	MIX HT
1-200	1.3-1.9	SW	
3-500	.6-.9	VAR	
6-1400	.8-1.5	SW	
15-2300	.6-2.7	ENE-ESE	
2400	1.1	SSW	

BILLINGS SO_2

HOUR	061	062	063	064	065	066
4, 8-20		X				
1-3, 6-16			X	X		
2-17, 24					X	
1-14, 16-17, 23-24						X

Buildup/containment in early a.m. followed by breakup & wind shift to ENE & E. Buildup late night

LAUREL SO_2

HOUR	014	015
10-1400	X	X A
17-2000	X	X
	B&C	

Source A – 10-14
Source B&C – 17-20

MPCo	ConBP	ConFC	GtWt	ExCat	ExCor	ExF2	ExF3	ExF3R	ExF5	ExF6SI	ExF700	MTSul	Cen#3	Cen#4	Cen#5	CenCM	CenCP	CenAH	CenSP	CenFC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24-064 = .035

Conc. at 16-1700 at 066 due to source C. Conc at 15-16 at 063 & 064 – sloshback. Conc in Laurel from 17-2000 due to Source B&C.

Table 89

DATE	81 11 17	TUE

METEOROLOGY

HOUR	W.S.	W.D	Mix Ht
[illegible]-1200	.8-2	WSW-SW	
13-1800	[illegible]	NE	
5-2000	[illegible]	[illegible]-NNE	
21-2400	1-3.[illegible]	[illegible]	

[illegible]

BILLINGS SO_2

HOUR	061	062	063	064	065	066
[illegible]-1200		X				
3-1100			X			
[illegible]-1100				X		
13, [illegible]-24					X	
[illegible]						X

Buildup followed by breakup but lasting longer – until 2100. Limited mixing.

LAUREL SO_2

HOUR	014	015
12-2000	X	
11-2100		X

Breakup – Mainly A – Some B&C with NE wind

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 – 066 = .081 Wind shift to NE at 13-1400 followed by high conc at 066 at 14-15. Site 066 being hit by both sides and coming down from above. Note WNW at 2400 – site 065

DATE	81 11 18	WED

METEOROLOGY

HOUR	W.S.	W.D	Mix Ht
1-400	.5-2.5	NW	
5-1000	.7-1.7	VAR	
11-1400	.7-5.8	NW	
15-2400	[illegible]-5.1	NE-ENE	

BILLINGS SO_2

HOUR	061	062	063	064	065	066
10, 13		X				
1000			X	X		
3-5, 9, 13,	19, 23				X	
10, 14-18,	22-24					X

NW wind in early a.m. prevent buildup to occur. Conc at 3-500 at 065 due to C

LAUREL SO_2

HOUR	014	015
2400	X	X

Source B&C with NE wind – low conc.

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 – 066 = .014 Wind shifts to NE & ENE at 1500. Conc are seen at 065 & 066 from "C".

DATE	81 11 19	THUR

METEOROLOGY

HOUR	W.S.	W.D	Mix Ht
1-500	1.7-2.7	E-ENE	
6-1400	.8-2.3	SE-SSE	
15-1800	2.2-3.8	ENE	
19-2000	.8-1.4	S-SSW	
21-2400	1.1-2.3	ENE	

BILLINGS SO_2

HOUR	061	062	063	064	065	066
3-5, 15-	16, 22, 24	X – B&C				
900			X	– Not a Reading		
3-5, 16, 24						X C

ENE winds at 3-500, 15-1600, & 22-2300 bring conc to 062 & 066.

LAUREL SO_2

HOUR	014	015
1, 1800		X

ENE winds – Area B&C – Billings

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 – 066 = .014

Note! Reading at 064 at 900 is invalid. Calibration or phone line problem. Checked out by JO ESS.

DATE	81 11 20	FRI

METEOROLOGY

HOUR	W.S.	W.D	Mix Ht
1-600	.7-1.4	VAR	
7-1300	.9-2.0	SSW-S	
14-1700	2-2.5	SW-WSW	
18-2400	1.1-1.6	SSW-S	

BILLINGS SO_2

HOUR	061	062	063	064	065	066
1-13, 15-24		X				
5-17, 19-24			X			
6-17, 20-24				X		
5-6, 9-17,	20-24				X	
1, 3-14,	16-17, 19-24					X

Buildup at 062 & 066 from previous day and then breakup at all sites 6–1700 – Buildup in late evening

LAUREL SO_2

HOUR	014	015
9-13, 16	X	
1-2, 13-15		X
20, 24		X

Conc at 1-2 from Billings followed by breakup – "A"

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 – 066 = .059

DATE	81 11 21	SAT

METEOROLOGY

HOUR	W.S.	W.D	Mix Ht
1-1500	.9-1.9	[illegible]	
16-1900	1.2-2.7	[illegible]	
22-2400	1-1.9	S-SSW	

BILLINGS SO_2

HOUR	061	062	063	064	065	066
8, 11, 13, 24		X				
1, 16, 17-24			X			
2400		B&C		X	X	X

Conc. contained near ground all day. Some breaking at mid day causing elevated levels.

LAUREL SO_2

HOUR	014	015
[illegible]	X	
[illegible]		X
[illegible] 21		X

Breakup – mid day. followed by buildup.

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 – 066 = .086

Higher conc [illegible] around 8-1400. at all sites.

DATE	81 11 22	SUN

METEOROLOGY

HOUR	W.S.	W.D	Mix Ht
1-1100	.9-1.9	SW-W	
12-1700	2.3-5.6	W-WNW	
18-2400	1.5-3.7	W-WSW	

BILLINGS SO_2

HOUR	061	062	063	064	065	066
3-500		X				
1-6, 10-11,	18-21, 24		X		B&C	
1-6, 10-11				X		
1-7					X	
1-5, 10-11	18-22					X

Conc buildup 1-600 at all sites – Wind shifts to WNW & blows away from sites – Break at 10-1100

LAUREL SO_2

HOUR	014	015
12, 24	X	
11-12, 24		X

Source A.

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 – 066 = .020 & 063 = .020

Faster SW winds at 18-2200 bring plumes down at 063 & 066.

DATE	81 11 23	MON

METEOROLOGY

HOUR	W.S.	W.D	Mix Ht
1-1100	1-1.6	SSE-SW	
12-1900	.8-4.1	NE-ENE	
20-2400	1.2-1.6	WSW-S	

BILLINGS SO_2

HOUR	061	062	063	064	065	066
4-17, 19-24		X				
3-17, 21-24			X		B&C	
1-17, 22-24				X		
3-7, 10-16,	21-24				X	
1-7, 10-24						X

Buildup in early a.m. followed by breakup 9-1500 Wind shifts to NE at 12 – C doubles back on 066

LAUREL SO_2

HOUR	014	015
100	X	X
10-1200		X
15-2000	X	X
	B&C	

Conc in p.m. is from Billings.

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 – 066 = .060 Wind shift to ENE & NE causes conc at 066 & 062 while other sites go down. Conc. build back up in late evening – all sites.

DATE	81 11 24	TUE

METEOROLOGY

HOUR	W.S.	W.D	Mix Ht
1-1000	.7-1.4	WSW-SSW	
11-2400	2.2-5.2	NE-ENE	

BILLINGS SO_2

HOUR	061	062	063	064	065	066
9-12, 20-22		X				
1-1200			X			
7-800				X		
1-2, 8-11					X	
1-4, 6-20,	22					X

Conc. occur all a.m. at 066 & 063 – mostly B. Breakup – 9-1200. Wind shift to ENE – "C" hits 066

LAUREL SO_2

HOUR	014	015
11-1200	X	X

Breakup – Source – A

MPCo	Con BP	Con FC	Gt Wt	Ex CAT	Ex Cok	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 – 066 = .057 There's not enough time for Laurel's conc to be from Billings (with NE winds) just breakup.

Table 90

DATE 81 11 25 WED

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-900	1.5-3.7	NNE-NNW	
10-2400	1.2-2	SW-SSW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
15-1600		X				
15-2400			X			
17, 23-24				X		
6-9, 15-17, 23-24					X	
2-4, 14-24						X

Wind blowing from N in early a.m. prevents buildup. With N wind's conc are seen at 065 & 066.—"C"

LAUREL SO2		
HOUR	014	015
16-1700	X	

Source: A

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cox	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
/	X				X	X					X	X	X	X	X	X	X	X	X	X

High 24 - 065 = .020

Wind shifts back to SW in p.m. & scattered readings are seen at 062, 064, 065. More constant readings at 063 & 066 — Mostly B.

DATE 81 11 26 THUR

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-2400	.9-2	SW-SSW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
12-1400		X				
1-2400			X			X
1-2000				X		
1-1700					X	

Constant SW winds all day with no lifting. Conc occur most of day at all sites.

LAUREL SO2		
HOUR	014	015

No Readings—Baseline

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cox	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 - 064 = .110

Note— as wind speed slows down in evening, conc. goes down. Means plumes are going up.

DATE 81 11 27 FRI

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-1400	1-1.7	SW-WSW	
15-2100	1.2-3.6	ENE	
22-2300	1.4-2.5	NW	
2400	.7	SSW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
11-2100		X				
1-1400			X			
4-1500				X	X	
21-2400					X	
1-2100						X

Conc. buildup at night and then breakup at all sites. 3-1600.

LAUREL SO2		
HOUR	014	015
11-1700	X	
13-1700		X

Breakup. —Source A. Not from Billings.

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cox	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 - 066 = .071

Wind shifts to ENE & hits 062 & 066 — mostly C. Wind shifts again to NW and hits 065 (21-2400) Source C.

DATE 81 11 28 SAT

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-2400	1.1-2.9	WSW-SSW	

Faster wind speeds 13-1500

BILLINGS SO2						
HOUR	061	062	063	064	065	066
10-1700		X			B&C.	
5-15, 18-20			X			
4-2400				X		
6-1700					X	
3-2400						X

General SW flow all day. Buildup followed by breakup. 064 & 066 stay high all p.m. Limited mixing.

LAUREL SO2		
HOUR	014	015
11-1700	X	

Breakup. Source A.

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cox	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 - 064 = .055

DATE 81 11 29 SUN

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-900	.9-1.6	WSW-SW	
10-1300	1.5-1.9	S	
14-1800	1.8-2.6	SW-SSW	
19-2400	1.6-2.1	S	

Limited mixing all day.

BILLINGS SO2						
HOUR	061	062	063	064	065	066
10-14, 18-24		X			B&C	
1-17, 20-24			X			
8-2400				X		
1-18, 20-24					X	
1-2400						X

Buildup at 066 in early a.m. followed by breakup at all sites (7-1800). Buildup in late evening - all sites

LAUREL SO2		
HOUR	014	015
10-1700	X	
2200	X	X
12-1400		X
	A	

Breakup— 10-1700 Slight buildup—2200

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cox	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 - 066 = .081

DATE 81 11 30 MON

METEOROLOGY			
HOUR	W.S.	W.D	Mix Ht
1-300	.8-1.7	S	
4-500	5.7-6.3	NW	

BILLINGS SO2						
HOUR	061	062	063	064	065	066
1-300		X				
1-3, 6-7, 18-19, 22-24			X			
1-4, 22-24				X		
1-3, 6, 22-24					X	
1-4, 6-8, 20-24						X

Buildup (1-300) - Blows out with NW winds (4-500) Buildup again (6-800) Blows out again. Evening buildup

LAUREL SO2		
HOUR	014	015
2400		X

slight buildup in evening

MPCo	Con BP	Con FC	Gt Wt	Ex Cat	Ex Cox	Ex F2	Ex F3	Ex F3R	Ex F5	Ex F651	Ex F700	MT Sul	Cen #3	Cen #4	Cen #5	Cen CM	Cen CP	Cen AH	Cen SP	Cen FC
X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X

High 24 - 064 = .038

Table 91

TABLE 92
SCENARIO SUMMARY
JANUARY, 1982

DAY	WIND DIRECTION DEPENDENT	BUILDUP BREAKUP CALM	BILLINGS TO LAUREL	LAUREL TO BILLINGS	SULFUR DIOXIDE RATING
82 01 01		X			6
82 01 02		X			10
82 01 03		X			8
82 01 04	X	X	X		5
82 01 05	X		X		5
82 01 06	X		X		9
82 01 07	X				9
82 01 08	X		X		10
82 01 09	X		X		3
82 01 10	X		X		4
82 01 11	X		X		3
82 01 12	X	X			6
82 01 13	X	X		X	3
82 01 14	X			X	3
82 01 15	X	X	X		1
82 01 16	X	X			5
82 01 17	X				3
82 01 18	X		X		9
82 01 19	X		X		4
82 01 20	X		X		2
82 01 21	X		X		4
82 01 22	X	X	X		3
82 01 23	X		X		9
82 01 24	X	X			3
82 01 25		X			7
82 01 26		X			6
82 01 27	X				1
82 01 28	X	X			8
82 01 29	X				6
82 01 30	X		X		8
82 01 31	X	X			5
TOTALS	26	14	15	2	

TABLE 93
SCENARIO SUMMARY
MAY, 1982

DAY	WIND DIRECTION DEPENDENT	BUILDUP BREAKUP CALM	BILLINGS TO LAUREL	LAUREL TO BILLINGS	SULFUR DIOXIDE RATING
82 05 01		X			2
82 05 02	X				1
82 05 03	X	X			3
82 05 04	X				3
82 05 05		X			1
82 05 06		X			1
82 05 07	X				1
82 05 08	X	X			1
82 05 09	X				2
82 05 10	X				1
82 05 11	X				1
82 05 12	X				1
82 05 13	X	X			1
82 05 14		X			1
82 05 15		X			1
82 05 16	X				1
82 05 17		X			1
82 05 18	X		X		2
82 05 19	X				1
82 05 20	X			X	2
82 05 21		X			2
82 05 22	X	X			2
82 05 23	X				1
82 05 24	X	X			2
82 05 25		X			1
82 05 26	X	X			1
82 05 27	X		X		0
82 05 28	X				1
82 05 29	X				2
82 05 30	X				4
82 05 31	X				3
TOTALS	23	14	2	1	

TABLE 94
SCENARIO SUMMARY
AUGUST, 1982

DAY	WIND DIRECTION DEPENDENT	BUILDUP BREAKUP CALM	BILLINGS TO LAUREL	LAUREL TO BILLINGS	SULFUR DIOXIDE RATING
82 08 01	X	X			3
82 08 02	X			X	1
82 08 03	X	X			5
82 08 04	X				2
82 08 05	X	X	X		5
82 08 06	X	X			3
82 08 07	X	X	X		3
82 08 08	X		X		6
82 08 09	X		X		3
82 08 10	X	X	X		1
82 08 11	X		X		3
82 08 12	X	X	X		1
82 08 13	X	X			4
82 08 14	X	X			3
82 08 15	X		X		3
82 08 16	X	X			1
82 08 17	X	X			4
82 08 18	X	X			4
82 08 19	X	X			2
82 08 20	X	X			5
82 08 21	X		X		2
82 08 22	X	X			2
82 08 23	X	X			3
82 08 24	X	X			2
82 08 25	X	X			3
82 08 26	X	X			3
82 08 27	X	X			3
82 08 28	X	X	X		2
82 08 29	X	X	X		2
82 08 30	X	X			3
82 08 31	X	X			3
TOTALS	31	24	11	1	

TABLE 95
SCENARIO SUMMARY
NOVEMBER, 1981

DAY	WIND DIRECTION DEPENDENT	BUILDUP BREAKUP CALM	BILLINGS TO LAUREL	LAUREL TO BILLINGS	SULFUR DIOXIDE RATING
81 11 01	X			X	7
81 11 02	X	X			10
81 11 03	X	X		X	13
81 11 04	X	X			5
81 11 05	X	X			2
81 11 06	X	X			5
81 11 07	X	X			5
81 11 08	X	X	X		3
81 11 09	X	X			6
81 11 10		X			8
81 11 11		X			8
81 11 12	X	X			7
81 11 13	X	X	X		3
81 11 14	X	X			4
81 11 15	X				3
81 11 16	X	X	X		3
81 11 17	X	X	X		8
81 11 18	X		X		1
81 11 19	X		X		1
81 11 20		X	X		5
81 11 21		X			8
81 11 22	X	X			2
81 11 23	X	X	X		6
81 11 24	X	X			5
81 11 25	X				2
81 11 26	X	X			11
81 11 27	X	X			7
81 11 28	X	X			5
81 11 29		X			8
81 11 30	X	X			3
TOTALS	25	25	8	2	

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL BILLINGS

TIME PERIOD : 1/ 1/82 TO 12/31/82 HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.6	0.7	1.0	1.2	1.1	1.0	1.5	2.1	6.5	9.6	8.4	3.8	1.2	0.5	0.5	0.5	40.3
1.6- 3.0	1.2	1.1	2.2	4.1	1.8	0.8	1.0	1.2	2.7	2.8	5.2	3.9	1.6	0.9	0.9	1.5	32.9
3.1- 5.0	1.0	0.7	2.3	5.4	0.7	0.5	0.4	0.1	0.1	0.2	1.6	3.4	1.5	1.3	1.0	0.9	21.1
5.1- 8.0	0.1	0.2	0.7	1.1	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.7	0.5	0.8	0.7	0.4	5.6
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	2.9	2.8	6.2	11.9	3.6	2.3	2.9	3.3	9.3	12.7	15.3	11.8	4.8	3.5	3.2	3.3	
CALM	0.1 (10 HOURS)																
AVG. SPEED	2.7	2.7	3.2	3.3	2.2	2.1	1.9	1.4	1.3	1.3	1.7	2.5	2.8	3.7	3.4	3.0	
NO. HOURS	250	248	541	1044	319	202	256	292	815	1108	1338	1032	418	310	279	288	3740

Table 96

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU   HELENA, MONTANA

SITE : 80062   TAFT SCHOOL   BILLINGS

TIME PERIOD : 1/ 1/82 TO 3/31/82   HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.6	1.2	1.6	1.5	1.3	1.1	1.6	2.4	5.4	5.4	4.9	2.0	1.0	0.4	0.3	0.6	31.2
1.6- 3.0	0.9	1.9	2.8	4.5	1.3	0.7	0.7	1.7	2.8	4.4	5.9	3.5	1.0	0.5	0.5	0.8	34.0
3.1- 5.0	0.4	0.6	3.0	7.8	1.0	0.1	0.0	0.1	0.2	0.4	3.9	5.9	2.3	0.8	0.4	0.3	27.2
5.1- 8.0	0.2	0.1	0.7	1.8	0.1	0.0	0.0	0.0	0.0	0.0	0.5	1.7	0.8	0.5	0.6	0.1	7.1
8.1-10.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	2.0	3.9	3.1	15.7	3.7	1.9	2.3	4.3	8.5	10.2	15.1	13.0	5.1	2.2	1.8	1.9	
CALM	0.3 (7 HOURS)																
AVG. SPEED	2.6	2.3	3.1	3.4	2.4	1.6	1.4	1.5	1.4	1.6	2.4	3.3	3.5	3.6	3.7	2.5	
NO. HOURS	44	83	175	338	80	41	50	92	182	219	324	280	109	48	38	40	2143

Table 97

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA,MONTANA

SITE : 80062 TAFT SCHOOL

BILLINGS

TIME PERIOD : 4/ 1/82 TO 6/30/82 HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.5	0.6	0.3	1.1	1.0	0.8	1.2	1.7	6.6	9.9	7.1	3.2	0.7	0.5	0.9	0.4	36.6
1.6- 3.0	1.2	0.6	1.1	4.6	3.0	1.3	1.7	0.7	1.1	1.6	4.0	3.9	1.8	1.4	1.0	1.9	31.0
3.1- 5.0	2.1	0.7	1.8	5.6	0.9	1.1	0.9	0.1	0.0	0.0	0.7	1.9	2.0	2.2	2.1	1.9	24.2
5.1- 8.0	0.3	0.7	0.7	1.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.4	0.6	1.5	1.3	1.1	8.1
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	4.1	2.7	4.0	12.5	5.0	3.3	3.9	2.6	7.7	11.5	11.9	9.4	5.1	5.6	5.3	5.3	
CALM	0.1 (3 HOURS)																
AVG. SPEED	3.2	3.5	3.7	3.3	2.4	2.6	2.2	1.4	1.1	1.1	1.5	2.3	3.2	3.8	3.7	3.5	
NO. HOURS	89	58	88	274	110	73	85	56	168	251	260	206	111	122	115	115	2181

Table 98

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MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES    AIR QUALITY BUREAU  HELENA,MONTANA

 SITE :  80062   TAFT SCHOOL                                                      BILLINGS

       TIME PERIOD :   7/ 1/82 TO  9/30/82    HOURS:  0 TO 23
                               SURFACE WIND ROSE FREQUENCY  TABLE

     DIR        N  NNE   NE  ENE    E  ESE   SE  SSE    S  SSW   SW  WSW    W  WNW   NW  NNW    TOTAL
 SPEED
 0.1- 1.5     0.6  0.5  0.8  0.9  1.1  1.2  1.5  1.5  7.2 13.2 12.1  4.8  1.7  0.6  0.5  0.5     48.9
 1.6- 3.0     1.4  0.7  2.7  4.9  2.0  0.9  1.0  1.0  1.5  1.5  4.6  2.7  1.6  0.8  1.3  2.4     31.1
 3.1- 5.0     0.9  0.9  2.9  5.9  0.9  0.6  0.7  0.0  0.0  0.0  0.3  0.6  0.5  0.7  0.8  0.9     16.6
 5.1- 8.0     0.0  0.1  1.0  1.3  0.0  0.0  0.2  0.0  0.0  0.0  0.0  0.0  0.0  0.2  0.2  0.4      3.4
 8.1-10.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0      0.0
10.1-14.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0      0.0
14.1-18.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0      0.0
18.1-22.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0      0.0
OVER 22.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0      0.0

COL.TOTALS    2.9  2.2  7.4 13.0  4.0  2.8  3.4  2.6  8.7 14.8 17.0  8.2  3.8  2.3  2.8  4.1

CALM          0.0 (    0 HOURS)

AVG. SPEED    2.5  2.7  3.3  3.3  2.2  2.1  2.2  1.5  1.2  1.1  1.3  1.6  1.9  2.8  2.8  2.7

NO. HOURS      65   48  163  285   89   61   76   58  192  327  376  181   84   50   61   91     2208
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Table 99

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU   HELENA,MONTANA

SITE : 80062 TAFT SCHOOL   BILLINGS

TIME PERIOD : 10/ 1/82 TO 12/31/82   HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.6	0.5	1.2	1.4	0.9	1.0	1.6	2.7	6.9	9.7	9.1	5.1	1.6	0.6	0.6	0.5	44.1
1.6- 3.0	1.2	1.3	2.2	2.6	0.9	0.2	0.4	1.2	5.3	3.9	6.2	5.4	2.0	0.9	0.8	0.9	35.4
3.1- 5.0	0.5	0.8	1.4	2.4	0.0	0.0	0.0	0.0	0.2	0.5	1.6	5.3	1.2	1.4	0.8	0.3	16.5
5.1- 8.0	0.0	0.0	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	0.4	1.0	0.6	0.2	3.7
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	2.4	2.7	5.2	6.6	1.8	1.2	2.0	3.9	12.4	14.1	17.1	16.5	5.2	4.1	2.9	1.9	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.4	2.5	2.7	2.7	1.6	1.2	1.2	1.3	1.5	1.4	1.8	2.6	2.6	4.0	3.4	2.5	
NO. HOURS	52	59	115	146	40	27	45	86	273	311	378	365	114	90	65	42	2208

Table 100

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU   HELENA,MONTANA

SITE : 80062   TAFT SCHOOL   BILLINGS

TIME PERIOD : JANUARY   1982   HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.3	0.9	1.3	1.9	1.5	0.8	1.7	2.4	4.8	5.4	3.1	0.9	0.4	0.3	0.1	0.4	26.3
1.6- 3.0	1.1	1.6	4.4	6.6	1.6	0.4	0.1	0.5	2.0	3.2	3.8	4.6	1.3	0.0	0.3	0.7	32.3
3.1- 5.0	0.0	0.4	2.6	14.5	1.5	0.1	0.0	0.0	0.0	0.0	1.5	7.4	4.2	0.8	0.8	0.1	33.9
5.1- 8.0	0.3	0.3	0.4	3.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.8	1.1	0.3	7.1
8.1-10.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	1.6	3.2	8.9	26.2	4.8	1.3	1.9	3.0	6.9	8.6	8.3	13.2	6.5	1.9	2.3	1.5	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.8	2.5	3.0	3.5	2.7	1.7	1.1	1.1	1.3	1.5	2.2	3.3	3.6	4.8	4.6	3.0	
NO. HOURS	12	24	66	195	36	10	14	22	51	64	62	98	48	14	17	11	744

Table 101

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL BILLINGS

TIME PERIOD : FEBRUARY 1982 HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.5	0.5	1.2	0.8	1.2	1.1	1.5	3.5	4.7	5.1	5.0	2.0	1.2	0.5	0.3	0.2	29.0
1.6- 3.0	0.2	2.0	0.8	1.1	0.9	0.8	0.6	3.5	5.4	6.6	9.8	3.0	1.1	0.8	0.6	0.5	37.5
3.1- 5.0	0.8	0.3	3.3	2.0	0.3	0.0	0.0	0.0	0.5	0.8	6.3	8.0	1.2	0.5	0.3	0.5	24.6
5.1- 8.0	0.0	0.0	0.5	1.4	0.0	0.0	0.0	0.0	0.0	0.0	1.1	4.1	1.2	0.2	0.3	0.2	8.8
8.1-10.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	1.4	2.7	5.7	5.3	2.4	1.8	2.1	6.9	10.6	12.5	22.2	17.1	4.7	1.8	1.5	1.2	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.6	2.3	3.3	3.8	1.7	1.4	1.4	1.5	1.7	1.8	2.6	3.8	3.5	3.1	2.8	2.9	
NO. HOURS	9	18	38	35	16	12	14	46	70	83	147	113	31	12	10	8	662

Table 102

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL BILLINGS

TIME PERIOD : MARCH 1982 HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.9	2.2	2.3	1.9	1.2	1.5	1.5	1.5	6.6	5.8	6.6	3.0	1.3	0.4	0.4	1.1	38.0
1.6- 3.0	1.5	2.2	3.0	5.4	1.5	0.9	1.5	1.3	1.3	3.5	4.4	2.8	0.5	0.8	0.5	1.3	32.5
3.1- 5.0	0.4	1.1	3.2	6.3	1.1	0.1	0.0	0.4	0.3	0.4	4.0	2.4	1.3	1.2	0.1	0.4	22.8
5.1- 8.0	0.3	0.1	1.1	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.1	0.8	0.5	0.4	0.0	5.6
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	3.1	5.5	9.5	14.5	3.8	2.6	3.0	3.2	8.2	9.7	15.5	9.3	4.0	3.0	1.5	2.8	
CALM	0.9 (7 HOURS)																
AVG. SPEED	2.4	2.2	3.0	3.1	2.3	1.6	1.7	1.8	1.2	1.5	2.2	2.7	3.1	3.2	3.0	2.1	
NO. HOURS	23	41	71	108	28	19	22	24	61	72	115	69	30	22	11	21	737

Table 103

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU HELENA,MONTANA

SITE : 80062 TAFT SCHOOL BILLINGS

TIME PERIOD : APRIL 1982 HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.4	1.1	0.3	1.0	0.6	0.4	0.3	1.4	6.7	8.5	5.4	2.9	1.0	0.6	1.2	0.4	32.1
1.6- 3.0	1.1	0.3	0.7	2.5	1.2	0.7	1.1	0.8	1.2	1.8	3.7	4.4	1.5	2.2	1.4	1.7	26.5
3.1- 5.0	2.1	0.1	2.4	5.3	0.6	0.7	1.5	0.1	0.0	0.0	1.4	3.6	2.6	3.5	3.5	1.8	29.2
5.1- 8.0	0.3	0.7	1.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.7	2.2	1.8	2.2	12.2
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	3.9	2.2	4.3	10.8	2.4	1.8	2.9	2.4	7.9	10.3	10.6	12.2	5.8	8.5	7.9	6.1	
CALM	0.0 (0 HOURS)																
AVG. SPEED	3.3	3.0	4.1	3.8	2.2	2.6	3.1	1.6	1.2	1.2	1.8	2.9	3.3	3.8	3.6	4.0	
NO. HOURS	28	16	31	78	17	13	21	17	57	74	76	88	42	61	57	44	720

Table 104

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL BILLINGS

TIME PERIOD : MAY 1982 HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.7	0.7	0.0	1.6	0.7	0.9	1.7	1.3	7.9	9.4	6.5	3.2	0.7	1.1	1.1	0.5	38.0
1.6- 3.0	1.7	1.1	1.5	4.4	2.8	0.8	1.5	0.4	0.5	1.5	2.7	3.4	2.2	1.5	1.3	2.4	29.7
3.1- 5.0	2.6	1.2	1.5	3.5	1.1	0.8	0.7	0.1	0.0	0.1	0.1	0.8	2.4	3.0	2.0	2.6	22.4
5.1- 8.0	0.3	1.2	0.9	0.8	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.2	2.0	0.7	9.7
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	5.2	4.2	3.9	10.3	4.7	3.0	3.9	1.9	8.5	11.0	9.3	7.4	6.3	7.7	6.5	6.2	
CALM	0.1 (1 HOURS)																
AVG. SPEED	3.0	3.8	3.8	3.0	2.6	2.7	1.8	1.2	1.0	1.0	1.2	1.8	3.3	3.9	3.9	3.3	
NO. HOURS	39	31	29	77	35	22	29	14	63	82	69	55	47	57	48	46	743

Table 105

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU HELENA,MONTANA

SITE : 80062   TAFT SCHOOL   BILLINGS

TIME PERIOD : JUNE   1982   HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.4	0.1	0.7	0.7	1.7	1.1	1.5	2.5	5.3	11.8	9.6	3.3	0.4	0.0	0.3	0.1	39.6
1.6- 3.0	0.7	0.4	1.2	6.9	5.0	2.4	2.6	1.0	1.4	1.4	5.7	4.0	1.7	0.6	0.3	1.7	36.9
3.1- 5.0	1.7	0.8	1.7	8.2	1.1	1.7	0.6	0.0	0.0	0.0	0.7	1.4	1.0	0.0	0.8	1.4	21.0
5.1- 8.0	0.3	0.1	0.3	0.7	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.2
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	3.1	1.5	3.9	16.5	8.1	5.3	4.9	3.5	6.7	13.2	16.0	8.7	3.1	0.6	1.4	3.5	
CALM	0.3 (2 HOURS)																
AVG. SPEED	3.2	3.1	3.2	3.3	2.4	2.6	2.0	1.3	1.2	1.0	1.5	2.0	2.6	1.9	3.0	3.0	
NO. HOURS	22	11	28	119	58	38	35	25	48	95	115	63	22	4	10	25	718

Table 106

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL BILLINGS

TIME PERIOD : JULY 1982 HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.4	0.4	1.2	0.9	0.8	2.0	1.9	1.6	6.6	12.4	12.1	3.9	1.6	0.3	0.4	1.1	47.6
1.6- 3.0	1.3	0.0	1.9	4.2	3.2	0.8	1.7	1.2	1.6	1.2	4.7	3.4	2.4	0.7	1.1	3.2	32.7
3.1- 5.0	0.5	0.8	1.3	5.6	0.8	0.8	0.3	0.0	0.0	0.0	0.9	1.6	1.1	1.3	0.8	1.6	17.6
5.1- 8.0	0.0	0.1	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.4	0.5	2.2
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	2.3	1.3	4.8	11.0	4.8	3.6	3.9	2.8	8.2	13.6	17.7	9.0	5.1	2.6	2.7	6.5	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.3	3.2	2.9	3.1	2.2	1.9	1.6	1.5	1.2	1.1	1.4	2.0	2.1	3.5	3.1	2.7	
NO. HOURS	17	10	36	82	36	27	29	21	61	101	132	67	38	19	20	48	744

Table 107

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU HELENA,MONTANA

SITE : 80062 TAFT SCHOOL   BILLINGS

TIME PERIOD : AUGUST   1982   HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.7	0.7	0.4	0.4	1.3	0.8	0.7	2.2	7.3	11.6	11.2	4.2	1.6	0.5	0.4	0.3	44.1
1.6- 3.0	1.1	1.2	3.8	6.7	1.6	0.7	0.7	1.2	1.7	2.0	4.8	3.0	1.5	0.9	1.6	1.1	33.6
3.1- 5.0	0.9	0.5	5.2	7.1	0.7	0.4	1.1	0.0	0.0	0.1	0.0	0.3	0.3	0.0	0.8	0.5	18.0
5.1- 8.0	0.0	0.1	1.7	1.3	0.0	0.1	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	4.3
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	2.7	2.6	11.2	15.6	3.6	2.0	2.8	3.5	9.0	13.7	16.0	7.4	3.4	1.5	3.0	2.2	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.6	2.4	3.7	3.4	2.0	2.2	3.1	1.5	1.1	1.1	1.3	1.5	1.8	1.9	2.5	3.0	
NO. HOURS	20	19	83	116	27	15	21	26	67	102	119	55	25	11	22	16	744

Table 108

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL BILLINGS

TIME PERIOD : SEPTEMBER 1982 HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.8	0.4	0.8	1.4	1.2	0.8	2.1	0.8	7.6	15.8	13.2	6.4	1.9	1.0	0.6	0.3	55.3
1.6- 3.0	1.9	1.0	2.5	3.7	1.2	1.1	0.6	0.7	1.2	1.4	4.2	1.8	0.8	0.7	1.1	2.8	26.8
3.1- 5.0	1.1	1.2	2.1	4.9	1.1	0.7	0.8	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.8	0.4	14.2
5.1- 8.0	0.0	0.0	0.7	2.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.3	3.7
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	3.9	2.6	6.1	12.2	3.6	2.6	3.6	1.5	8.9	17.2	17.4	8.2	2.9	2.8	2.6	3.7	
CALM	0.0 (	0 HOURS)															
AVG. SPEED	2.5	2.9	3.1	3.4	2.3	2.3	2.0	1.4	1.1	1.0	1.2	1.2	1.5	2.6	2.7	2.6	
NO. HOURS	28	19	44	88	26	19	26	11	64	124	125	59	21	20	19	27	720

Table 109

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL BILLINGS

TIME PERIOD : OCTOBER 1982 HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
SPEED																	
0.1- 1.5	0.5	0.8	1.1	0.9	1.5	0.8	1.7	1.5	5.9	9.9	10.5	6.5	1.7	0.7	0.7	1.1	45.8
1.6- 3.0	2.3	1.3	2.4	2.4	0.8	0.1	0.5	0.8	2.3	2.6	6.0	7.1	2.3	1.9	1.7	1.6	36.3
3.1- 5.0	0.7	0.9	1.1	0.9	0.0	0.0	0.0	0.0	0.0	0.1	1.1	6.6	1.2	1.9	0.9	0.3	15.7
5.1- 8.0	0.0	0.1	0.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3	0.0	2.2
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	3.5	3.2	5.2	4.7	2.3	0.9	2.3	2.3	8.2	12.6	17.7	20.3	5.4	4.7	3.6	3.0	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.5	2.6	2.7	2.6	1.2	1.1	1.3	1.3	1.3	1.3	1.7	2.5	2.3	3.0	2.6	1.9	
NO. HOURS	26	24	39	35	17	7	17	17	61	94	132	151	40	35	27	22	744

Table 110

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU   HELENA,MONTANA

SITE : 80062   TAFT SCHOOL   BILLINGS

TIME PERIOD : NOVEMBER   1982   HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
SPEED																	
0.1- 1.5	0.4	0.4	0.7	0.7	0.6	0.7	1.2	2.5	8.5	11.8	10.1	5.3	1.1	0.7	0.4	0.4	45.6
1.6- 3.0	0.7	0.3	1.4	3.1	1.1	0.3	0.3	1.7	9.3	5.8	5.6	5.1	1.9	0.3	0.3	0.7	37.8
3.1- 5.0	0.6	0.4	1.0	3.3	0.1	0.0	0.0	0.0	0.0	0.0	1.2	3.9	1.8	0.4	0.7	0.0	13.5
5.1- 8.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.1	1.0	0.4	3.2
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	1.7	1.1	3.6	7.1	1.8	1.0	1.5	4.2	17.8	17.6	16.9	14.3	5.0	2.5	2.4	1.5	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.6	2.4	3.1	3.0	2.0	1.1	1.2	1.3	1.5	1.4	1.6	2.2	2.7	3.8	4.1	2.9	
NO. HOURS	12	8	26	51	13	7	11	30	128	127	122	103	36	18	17	11	720

Table 111

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL BILLINGS

TIME PERIOD : DECEMBER 1982 HOURS: 0 TO 23

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.8	0.4	1.7	2.7	0.5	1.3	1.9	4.0	6.3	7.5	6.9	3.6	1.9	0.5	0.7	0.1	41.0
1.6- 3.0	0.7	2.3	2.8	2.3	0.8	0.3	0.4	1.2	4.4	3.4	6.9	3.9	1.7	0.4	0.4	0.3	32.1
3.1- 5.0	0.4	0.9	2.2	3.1	0.0	0.1	0.0	0.0	0.5	1.2	2.6	5.5	0.5	1.7	0.8	0.7	20.3
5.1- 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.9	0.9	1.7	0.7	0.1	5.8
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.0	0.5
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.3
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	1.9	3.6	6.7	8.1	1.3	1.7	2.3	5.2	11.3	12.1	16.7	14.9	5.1	5.0	2.8	1.2	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.0	2.5	2.4	2.5	1.5	1.3	1.1	1.4	1.6	1.6	2.1	3.0	2.8	4.9	4.0	3.6	
NO. HOURS	14	27	50	60	10	13	17	39	84	90	124	111	38	37	21	9	744

Table 112

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU   HELENA, MONTANA

SITE : 80062   TAFT SCHOOL--DIURNAL WIND ROSES FOR JANUARY 1982   BILLINGS

TIME PERIOD : JANUARY   1982   HOURS: 1-300

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	1.1	1.1	1.1	0.0	1.1	1.1	3.2	3.2	6.5	6.5	5.4	1.1	0.0	0.0	0.0	0.0	31.2
1.6- 3.0	1.1	0.0	8.6	8.6	3.2	1.1	0.0	2.2	2.2	3.2	2.2	3.2	0.0	0.0	0.0	2.2	37.6
3.1- 5.0	0.0	0.0	1.1	14.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	7.5	1.1	0.0	0.0	0.0	25.8
5.1- 8.0	0.0	0.0	0.0	2.2	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	5.4
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	2.2	1.1	10.8	24.7	6.5	2.2	3.2	5.4	8.6	9.7	9.7	11.8	2.2	0.0	0.0	2.2	
CALM	0.0 (0 HOURS)																
AVG. SPEED	1.5	1.4	2.3	3.4	3.5	1.3	1.1	1.2	1.3	1.5	2.0	3.2	4.3	0.0	0.0	2.3	
NO. HOURS	2	1	10	23	6	2	3	5	8	9	9	11	2	0	0	2	93

Table 113

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU   HELENA, MONTANA

SITE : 80062   TAFT SCHOOL--DIURNAL WIND ROSES FOR JANUARY 1982   BILLINGS

TIME PERIOD : JANUARY 1982 HOURS: 4-600

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	3.3	3.3	1.1	2.2	1.1	1.1	7.6	5.4	5.4	2.2	2.2	0.0	0.0	0.0	1.1	35.9
1.6- 3.0	0.0	0.0	2.2	14.1	0.0	0.0	0.0	0.0	2.2	5.4	4.3	5.4	3.3	0.0	0.0	0.0	37.0
3.1- 5.0	0.0	0.0	2.2	15.2	0.0	0.0	0.0	0.0	0.0	0.0	2.2	2.2	2.2	0.0	1.1	0.0	25.0
5.1- 8.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	0.0	3.3	7.6	32.6	2.2	1.1	1.1	7.6	7.6	10.9	8.7	9.8	5.4	0.0	1.1	1.1	
CALM	0.0 (0 HOURS)																
AVG. SPEED	0.0	1.0	2.1	3.1	0.9	1.2	0.3	0.9	1.1	1.6	2.4	2.5	2.6	0.0	3.5	1.4	
NO. HOURS	0	3	7	30	2	1	1	7	7	10	8	9	5	0	1	1	92

Table 114

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA,MONTANA

SITE : 30062 TAFT SCHOOL--DIURNAL WIND ROSES FOR JANUARY 1982 BILLINGS

TIME PERIOD : JANUARY 1982 HOURS: 7-900

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	0.0	1.1	5.4	1.1	2.2	1.1	1.1	10.8	8.6	3.2	0.0	1.1	0.0	0.0	1.1	36.6
1.6- 3.0	0.0	1.1	2.2	5.4	1.1	0.0	0.0	0.0	4.3	5.4	5.4	3.2	0.0	0.0	0.0	0.0	28.0
3.1- 5.0	0.0	1.1	1.1	17.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	1.1	2.2	0.0	0.0	30.1
5.1- 8.0	0.0	1.1	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	5.4
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	0.0	3.2	4.3	30.1	2.2	2.2	1.1	1.1	15.1	14.0	8.6	12.9	2.2	2.2	0.0	1.1	
CALM	0.0 (0 HOURS)																
AVG. SPEED	0.0	4.1	2.5	3.3	1.3	1.2	0.9	0.6	1.4	1.5	1.7	3.9	2.4	4.5	0.0	1.0	
NO. HOURS	0	3	4	28	2	2	1	1	14	13	8	12	2	2	0	1	93

Table 115

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA,MONTANA

SITE : 30062 TAFT SCHOOL--DIURNAL WIND ROSES FOR JANUARY 1982 BILLINGS

TIME PERIOD : JANUARY 1982 HOURS: 10-1200

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	0.0	1.1	1.1	2.2	1.1	0.0	1.1	4.3	8.6	2.2	0.0	1.1	0.0	0.0	0.0	22.6
1.6- 3.0	0.0	2.2	2.2	3.2	3.2	0.0	0.0	1.1	1.1	4.3	6.5	5.4	3.2	0.0	0.0	0.0	32.3
3.1- 5.0	0.0	0.0	4.3	12.9	1.1	0.0	0.0	0.0	0.0	0.0	1.1	10.8	5.4	1.1	1.1	0.0	37.6
5.1- 8.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	1.1	0.0	0.0	7.5
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	0.0	2.2	7.5	21.5	6.5	1.1	0.0	2.2	5.4	12.9	9.7	16.1	11.8	2.2	1.1	0.0	
CALM	0.0 (0 HOURS)																
AVG. SPEED	0.0	2.2	2.9	3.9	2.0	0.5	0.0	1.6	1.4	1.5	2.2	3.7	3.9	5.7	3.3	0.0	
NO. HOURS	0	2	7	20	6	1	0	2	5	12	9	15	11	2	1	0	93

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR JANUARY 1982 BILLINGS

TIME PERIOD : JANUARY 1982 HOURS: 13-1500

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	2.2	1.1	4.3	0.0	1.1	2.2	0.0	0.0	5.4	1.1	0.0	0.0	1.1	0.0	0.0	18.3
1.6- 3.0	1.1	2.2	3.2	7.5	0.0	0.0	0.0	0.0	2.2	1.1	4.3	2.2	1.1	0.0	1.1	0.0	25.8
3.1- 5.0	0.0	0.0	3.2	17.2	0.0	0.0	0.0	0.0	0.0	0.0	3.2	12.9	9.7	1.1	2.2	0.0	49.5
5.1- 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	3.2	1.1	6.5
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	1.1	4.3	7.5	29.0	0.0	1.1	2.2	0.0	2.2	6.5	8.6	15.1	10.8	4.3	6.5	1.1	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.6	1.9	3.0	3.0	0.0	1.4	1.1	0.0	1.6	1.3	3.0	3.8	4.1	5.1	5.3	7.4	
NO. HOURS	1	4	7	27	0	1	2	0	2	6	8	14	10	4	6	1	93

Table 117

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA,MONTANA

SITE : 80062 TAFT SCHOOL—DIURNAL WIND ROSES FOR JANUARY 1982 BILLINGS

TIME PERIOD : JANUARY 1982 HOURS: 16-1800

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	1.1	1.1	1.1	2.2	0.0	0.0	1.1	2.2	0.0	1.1	1.1	0.0	0.0	0.0	0.0	10.8
1.6- 3.0	3.2	4.3	7.5	5.4	1.1	1.1	0.0	1.1	0.0	0.0	1.1	8.6	2.2	0.0	0.0	2.2	37.6
3.1- 5.0	0.0	1.1	4.3	3.6	3.2	0.0	0.0	0.0	0.0	0.0	1.1	6.5	7.5	1.1	1.1	0.0	34.4
5.1- 8.0	0.0	1.1	3.2	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	4.3	0.0	15.1
8.1-10.0	0.0	0.0	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	3.2	7.5	17.2	20.4	6.5	1.1	0.0	2.2	2.2	0.0	3.2	16.1	10.8	2.2	5.4	2.2	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.4	2.9	4.1	4.0	2.4	2.7	0.0	1.4	1.1	0.0	2.3	2.8	3.6	4.2	5.3	2.4	
NO. HOURS	3	7	16	19	6	1	0	2	2	0	3	15	10	2	5	2	93

Table 118

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR JANUARY 1982 BILLINGS

TIME PERIOD : JANUARY 1982 HOURS: 19-2100

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	1.1	0.0	1.1	1.1	3.2	0.0	3.2	4.3	4.3	2.2	2.2	2.2	0.0	0.0	0.0	1.1	25.8
1.6- 3.0	1.1	2.2	2.2	3.2	3.2	0.0	0.0	0.0	0.0	4.3	3.2	6.5	1.1	0.0	0.0	0.0	26.9
3.1- 5.0	0.0	1.1	3.2	15.1	5.4	0.0	0.0	0.0	0.0	0.0	1.1	2.2	5.4	0.0	1.1	0.0	34.4
5.1- 8.0	2.2	0.0	0.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	1.1	1.1	12.9
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	4.3	3.2	6.5	25.8	11.8	0.0	3.2	4.3	4.3	6.5	6.5	10.8	6.5	2.2	2.2	2.2	
CALM	0.0 (0 HOURS)																
AVG. SPEED	3.9	2.9	3.2	3.8	3.1	0.0	0.9	1.0	1.2	1.6	2.1	2.6	3.6	6.4	5.1	3.9	
NO. HOURS	4	3	6	24	11	0	3	4	4	6	6	10	6	2	2	2	93

Table 119

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR JANUARY 1982 BILLINGS

TIME PERIOD : JANUARY 1982 HOURS: 22-2400

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	0.0	1.1	1.1	0.0	0.0	3.2	1.1	4.3	6.5	7.5	1.1	1.1	1.1	1.1	0.0	29.0
1.6- 3.0	2.2	1.1	7.5	5.4	1.1	1.1	1.1	0.0	4.3	2.2	3.2	2.2	0.0	0.0	1.1	1.1	33.3
3.1- 5.0	0.0	0.0	1.1	16.1	2.2	1.1	0.0	0.0	0.0	0.0	1.1	9.7	1.1	1.1	0.0	1.1	34.4
5.1- 8.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2
8.1-10.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	2.2	1.1	9.7	25.8	3.2	2.2	4.3	1.1	8.6	8.6	11.8	12.9	2.2	2.2	2.2	2.2	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.6	1.6	2.4	3.9	3.6	3.0	1.2	1.1	1.5	1.5	1.8	3.5	2.2	2.3	1.5	2.8	
NO. HOURS	2	1	9	24	3	2	4	1	8	8	11	12	2	2	2	2	93

Table 120

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA,MONTANA

SITE : 30062 TAFT SCHOOL--DIURNAL WIND ROSES FOR MAY 1982 BILLINGS

TIME PERIOD : MAY 1982 HOURS: 1-300

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	2.2	2.2	0.0	3.2	3.2	1.1	2.2	2.2	10.8	23.7	11.8	6.5	2.2	0.0	3.2	1.1	75.3
1.6- 3.0	0.0	0.0	0.0	2.2	1.1	0.0	0.0	0.0	0.0	3.2	2.2	0.0	1.1	1.1	1.1	2.2	14.0
3.1- 5.0	1.1	0.0	1.1	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	2.2	9.7
5.1- 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	3.2	2.2	1.1	7.5	4.3	1.1	2.2	2.2	10.8	26.9	14.0	6.5	6.5	1.1	4.3	6.5	
CALM	0.0 (0 HOURS)																
AVG. SPEED	1.5	1.2	3.2	2.2	1.2	1.4	0.8	0.9	0.7	0.8	1.1	0.7	2.7	2.2	1.6	3.0	
NO. HOURS	3	2	1	7	4	1	2	2	10	25	13	6	6	1	4	6	93

Table 121

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : [illegible]062 TAFT SCHOOL--DIURNAL WIND ROSES FOR MAY 1982 BILLINGS

TIME PERIOD : MAY 1982 HOURS: 4-600

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	1.1	2.2	0.0	1.1	0.0	1.1	3.2	1.1	12.9	23.7	16.1	4.3	2.2	1.1	1.1	1.1	72.0
1.6- 3.0	1.1	2.2	0.0	2.2	0.0	0.0	0.0	0.0	0.0	2.2	3.2	4.3	2.2	2.2	0.0	0.0	19.4
3.1- 5.0	1.1	1.1	2.2	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	0.0	8.6
5.1- 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	3.2	5.4	2.2	4.3	1.1	1.1	3.2	1.1	12.9	25.8	19.4	8.6	4.3	4.3	2.2	1.1	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.0	2.0	3.8	2.6	4.6	0.9	0.4	0.2	0.9	0.9	0.8	1.5	1.2	2.4	2.3	0.9	
NO. HOURS	3	5	2	4	1	1	3	1	12	24	18	8	4	4	2	1	93

Table 122

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MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES    AIR QUALITY BUREAU  HELENA,MONTANA

  SITE :  30062   TAFT SCHOOL--DIURNAL WIND ROSES FOR MAY 1982                   BILLINGS

        TIME PERIOD :  MAY            1982    HOURS:  7-900

                              SURFACE WIND ROSE FREQUENCY  TABLE

      DIR        N   NNE    NE   ENE     E   ESE    SE   SSE     S   SSW    SW   WSW     W   WNW    NW   NNW     TOTAL
 SPEED
 0.1- 1.5      0.0   0.0   0.0   4.3   0.0   0.0   1.1   0.0   5.4  10.8  12.9   7.5   0.0   1.1   1.1   0.0      44.1
 1.6- 3.0      1.1   1.1   1.1   2.2   0.0   0.0   0.0   0.0   0.0   1.1   6.5   8.6   7.5   1.1   1.1   2.2      33.3
 3.1- 5.0      1.1   1.1   0.0   3.2   0.0   0.0   0.0   0.0   0.0   0.0   0.0   2.2   1.1   3.2   1.1   0.0      12.9
 5.1- 8.0      0.0   0.0   0.0   2.2   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   4.3   2.2   1.1   0.0       9.7
 8.1-10.0      0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0       0.0
10.1-14.0      0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0       0.0
14.1-18.0      0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0       0.0
18.1-22.0      0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0       0.0
OVER 22.0      0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0       0.0

COL.TOTALS     2.2   2.2   1.1  11.8   0.0   0.0   1.1   0.0   5.4  11.8  19.4  18.3  12.9   7.5   4.3   2.2

CALM           0.0 (     0 HOURS)

AVG. SPEED     2.9   3.2   1.8   2.8   0.0   0.0   0.4   0.0   0.8   1.1   1.2   1.9   3.4   3.7   3.1   3.0

NO. HOURS        2     2     1    11     0     0     1     0     5    11    18    17    12     7     4     2        93
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Table 123

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU   HELENA,MONTANA

SITE : 30062   TAFT SCHOOL--DIURNAL WIND ROSES FOR MAY 1982   BILLINGS

TIME PERIOD : MAY   1982   HOURS: 10-1200

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	2.2	0.0	0.0	2.2	1.1	2.2	2.2	0.0	4.3	1.1	1.1	1.1	0.0	2.2	1.1	1.1	21.5
1.6- 3.0	2.2	3.2	4.3	8.6	1.1	0.0	0.0	0.0	0.0	1.1	0.0	5.4	3.2	2.2	1.1	2.2	34.4
3.1- 5.0	2.2	0.0	0.0	6.5	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.2	6.5	6.5	7.5	34.4
5.1- 8.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	3.2	2.2	1.1	9.7
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	6.5	3.2	4.3	18.3	3.2	2.2	2.2	0.0	4.3	2.2	1.1	7.5	8.6	14.0	10.8	11.8	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.4	2.3	2.1	2.9	2.6	0.9	1.2	0.0	1.0	1.8	1.1	2.3	4.0	4.1	4.1	3.6	
NO. HOURS	6	3	4	17	3	2	2	0	4	2	1	7	8	13	10	11	93

Table 124

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR MAY 1982 BILLINGS

TIME PERIOD : MAY 1982 HOURS: 13-1500

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	1.1	3.2	0.0	0.0	1.1	0.0	6.5
1.6- 3.0	3.2	1.1	2.2	6.5	5.4	2.2	4.3	0.0	1.1	2.2	4.3	1.1	1.1	1.1	1.1	3.2	39.8
3.1- 5.0	2.2	1.1	2.2	3.2	1.1	0.0	1.1	0.0	0.0	0.0	0.0	2.2	4.3	9.7	1.1	4.3	32.3
5.1- 8.0	1.1	3.2	1.1	2.2	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	6.5	2.2	21.5
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	6.5	5.4	5.4	11.8	6.5	5.4	5.4	0.0	1.1	2.2	5.4	6.5	5.4	14.0	9.7	9.7	
CALM	0.0 (0 HOURS)																
AVG. SPEED	3.6	5.3	4.0	3.5	3.1	3.5	2.3	0.0	1.6	2.0	1.9	2.3	3.3	4.7	5.5	3.8	
NO. HOURS	6	5	5	11	6	5	5	0	1	2	5	6	5	13	9	9	93

Table 125

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA,MONTANA

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR MAY 1982 BILLINGS

TIME PERIOD : MAY 1982 HOURS: 16-1800

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	0.0	0.0	0.0	0.0	1.1	4.3	0.0	3.2	2.2	0.0	0.0	0.0	0.0	0.0	0.0	10.8
1.6- 3.0	2.2	0.0	0.0	5.4	6.5	3.2	0.0	1.1	1.1	0.0	2.2	2.2	0.0	0.0	1.1	5.4	30.1
3.1- 5.0	6.5	3.2	4.3	6.5	2.2	4.3	1.1	1.1	0.0	0.0	1.1	1.1	3.2	2.2	1.1	1.1	38.7
5.1- 8.0	0.0	3.2	1.1	1.1	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	2.2	6.5	3.2	1.1	20.4
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	8.6	6.5	5.4	12.9	9.7	9.7	5.4	2.2	4.3	2.2	3.2	3.2	5.4	8.6	5.4	7.5	
CALM	0.0 (0 HOURS)																
AVG. SPEED	3.6	5.0	4.3	3.4	3.0	3.1	1.8	2.3	1.5	0.8	3.1	2.7	4.6	5.5	5.2	3.1	
NO. HOURS	8	6	5	12	9	9	5	2	4	2	3	3	5	8	5	7	93

Table 126

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR MAY 1982 BILLINGS

TIME PERIOD : MAY 1982 HOURS: 19-2100

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	1.1	0.0	1.1	1.1	0.0	0.0	2.2	5.4	3.2	1.1	0.0	0.0	2.2	1.1	1.1	19.4
1.6- 3.0	4.3	0.0	3.2	4.3	4.3	1.1	5.4	0.0	2.2	0.0	2.2	2.2	0.0	0.0	4.3	2.2	35.5
3.1- 5.0	3.2	2.2	1.1	4.3	3.2	2.2	3.2	0.0	0.0	1.1	0.0	0.0	3.2	1.1	4.3	2.2	31.2
5.1- 8.0	1.1	3.2	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	3.2	0.0	14.0
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	8.6	6.5	8.6	9.7	8.6	3.2	8.6	2.2	7.5	4.3	3.2	2.2	3.2	5.4	12.9	5.4	
CALM	0.0 (0 HOURS)																
AVG. SPEED	3.3	4.7	4.4	3.2	2.6	3.2	2.8	1.0	1.1	1.8	1.5	2.1	4.2	3.6	3.5	2.7	
NO. HOURS	8	6	8	9	8	3	8	2	7	4	3	2	3	5	12	5	93

Table 127

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR MAY 1982 BILLINGS

TIME PERIOD : MAY 1982 HOURS: 22-2400

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	0.0	0.0	1.1	0.0	1.1	1.1	5.4	21.5	10.8	7.5	3.2	1.1	2.2	0.0	0.0	54.8
1.6- 3.0	0.0	1.1	1.1	4.3	4.3	0.0	2.2	2.2	0.0	2.2	1.1	3.2	2.2	4.3	1.1	2.2	31.2
3.1- 5.0	3.2	1.1	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	1.1	3.2	11.8
5.1- 8.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	3.2	2.2	3.2	6.5	4.3	1.1	3.2	7.5	21.5	12.9	8.6	6.5	4.3	6.5	2.2	5.4	
CALM	1.1 (1 HOURS)																
AVG. SPEED	3.5	3.6	4.0	2.3	2.0	0.6	1.6	1.2	0.9	0.8	0.9	1.5	2.2	1.7	3.4	3.1	
NO. HOURS	3	2	3	6	4	1	3	7	20	12	8	6	4	6	2	5	92

Table 128

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU   HELENA, MONTANA

SITE : 80062   TAFT SCHOOL--DIURNAL WIND ROSES FOR AUGUST 1982   BILLINGS

TIME PERIOD : AUGUST 1982   HOURS: 1-300

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	1.1	0.0	1.1	3.2	0.0	0.0	2.2	16.1	17.2	18.3	4.3	4.3	0.0	0.0	0.0	67.7
1.6- 3.0	1.1	3.2	1.1	6.5	3.2	1.1	0.0	0.0	0.0	0.0	3.2	4.3	0.0	1.1	2.2	0.0	26.9
3.1- 5.0	0.0	0.0	3.2	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3
5.1- 3.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	1.1	4.3	4.3	8.6	7.5	1.1	0.0	2.2	16.1	17.2	21.5	8.6	4.3	1.1	2.2	0.0	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.0	1.8	3.6	2.5	2.0	2.9	0.0	0.7	0.9	0.8	1.2	1.3	1.1	1.9	2.0	0.0	
NO. HOURS	1	4	4	8	7	1	0	2	15	16	20	8	4	1	2	0	93

Table 129

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA,MONTANA

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR AUGUST 1982 BILLINGS

TIME PERIOD : AUGUST 1982 HOURS: 4-600

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	1.1	3.2	2.2	0.0	4.3	1.1	1.1	1.1	11.8	25.8	18.3	7.5	2.2	2.2	1.1	0.0	82.8
1.6- 3.0	0.0	1.1	4.3	1.1	0.0	0.0	0.0	0.0	1.1	0.0	2.2	0.0	2.2	0.0	0.0	0.0	11.8
3.1- 5.0	0.0	0.0	1.1	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	5.4
5.1- 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	1.1	4.3	7.5	4.3	4.3	1.1	1.1	1.1	12.9	25.8	20.4	7.5	5.4	2.2	1.1	0.0	
CALM	0.0 (0 HOURS)																
AVG. SPEED	0.9	0.9	2.2	3.4	0.9	0.6	1.1	0.6	0.9	0.8	1.1	0.8	2.1	1.4	0.7	0.0	
NO. HOURS	1	4	7	4	4	1	1	1	12	24	19	7	5	2	1	0	93

Table 130

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU   HELENA,MONTANA

SITE : 80062   TAFT SCHOOL--DIURNAL WIND ROSES FOR AUGUST 1982   BILLINGS

TIME PERIOD : AUGUST   1982   HOURS: 7-900

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	0.0	0.0	0.0	0.0	2.2	2.2	0.0	8.6	21.5	21.5	2.2	0.0	1.1	1.1	0.0	60.2
1.6- 3.0	0.0	1.1	3.2	3.2	0.0	0.0	0.0	0.0	0.0	3.2	12.9	2.2	1.1	1.1	3.2	0.0	31.2
3.1- 5.0	0.0	0.0	2.2	5.4	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	8.6
5.1- 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	0.0	1.1	5.4	8.6	0.0	2.2	2.2	0.0	8.6	25.8	34.4	4.3	1.1	2.2	4.3	0.0	
CALM	0.0 (0 HOURS)																
AVG. SPEED	0.0	2.2	3.2	3.2	0.0	0.7	1.1	0.0	1.0	1.3	1.4	1.5	2.1	1.9	1.8	0.0	
NO. HOURS	0	1	5	8	0	2	2	0	8	24	32	4	1	2	4	0	93

Table 131

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MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES    AIR QUALITY BUREAU  HELENA,MONTANA

  SITE :  80062   TAFT SCHOOL--DIURNAL WIND ROSES FOR AUGUST 1982              BILLINGS

       TIME PERIOD :  AUGUST          1982    HOURS:  10-1200

                            SURFACE WIND ROSE FREQUENCY  TABLE

     DIR         N   NNE   NE  ENE    E  ESE   SE  SSE    S  SSW   SW  WSW    W  WNW   NW  NNW     TOTAL
  SPEED
  0.1- 1.5     0.0  0.0  0.0  1.1  0.0  0.0  0.0  1.1  4.3  8.6  9.7  9.7  0.0  0.0  1.1  1.1      36.6
  1.6- 3.0     1.1  0.0  4.3 10.8  0.0  2.2  2.2  3.2  4.3  5.4  6.5  9.7  2.2  0.0  1.1  1.1      53.8
  3.1- 5.0     0.0  0.0  5.4  3.2  0.0  0.0  0.0  0.0  0.0  0.0  0.0  1.1  0.0  0.0  0.0  0.0       9.7
  5.1- 8.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0       0.0
  8.1-10.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0       0.0
 10.1-14.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0       0.0
 14.1-18.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0       0.0
 18.1-22.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0       0.0
 OVER 22.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0       0.0

COL.TOTALS     1.1  0.0  9.7 15.1  0.0  2.2  2.2  4.3  8.6 14.0 16.1 20.4  2.2  0.0  2.2  2.2

CALM           0.0 (    0 HOURS)

AVG. SPEED     1.3  0.0  3.7  2.6  0.0  1.9  1.9  1.7  1.4  1.5  1.5  1.7  2.1  0.0  1.3  1.5

NO. HOURS        1    0    9   14    0    2    2    4    8   13   15   19    2    0    2    2        93
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Table 132

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA,MONTANA

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR AUGUST 1982 BILLINGS

TIME PERIOD : AUGUST 1982 HOURS: 13-1500

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	1.1	0.0	0.0	1.1	0.0	0.0	1.1	1.1	2.2	2.2	1.1	2.2	2.2	1.1	0.0	0.0	15.1
1.6- 3.0	1.1	1.1	5.4	12.9	3.2	0.0	2.2	0.0	3.2	2.2	6.5	4.3	2.2	5.4	2.2	1.1	52.7
3.1- 5.0	1.1	1.1	6.5	7.5	1.1	2.2	3.2	0.0	0.0	0.0	0.0	1.1	1.1	0.0	1.1	0.0	25.8
5.1- 8.0	0.0	0.0	4.3	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	6.5
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	3.2	2.2	16.1	21.5	4.3	3.2	6.5	1.1	5.4	4.3	7.5	7.5	5.4	6.5	4.3	1.1	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.3	3.0	4.0	3.0	2.4	4.1	3.0	1.4	1.6	1.4	1.8	1.9	2.2	2.1	3.5	2.6	
NO. HOURS	3	2	15	20	4	3	6	1	5	4	7	7	5	6	4	1	93

Table 133

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MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES    AIR QUALITY BUREAU  HELENA,MONTANA

  SITE :  80062   TAFT SCHOOL--DIURNAL WIND ROSES FOR AUGUST 1982               BILLINGS

       TIME PERIOD :   AUGUST        1982    HOURS:  16-1800

                           SURFACE WIND ROSE FREQUENCY  TABLE

     DIR        N   NNE   NE  ENE    E  ESE   SE  SSE    S  SSW   SW  WSW    W  WNW   NW  NNW    TOTAL
 SPEED
 0.1- 1.5     0.0  0.0  0.0  0.0  0.0  0.0  1.1  1.1  3.2  0.0  3.2  0.0  1.1  0.0  0.0  0.0      9.7
 1.6- 3.0     0.0  1.1  3.2 10.8  2.2  1.1  1.1  2.2  0.0  0.0  3.2  1.1  1.1  0.0  3.2  4.3     34.4
 3.1- 5.0     3.2  2.2 10.8 11.8  1.1  1.1  3.2  0.0  0.0  0.0  0.0  0.0  0.0  0.0  3.2  1.1     37.6
 5.1- 8.0     0.0  1.1  8.6  3.2  0.0  0.0  2.2  1.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0  2.2     18.3
 8.1-10.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0      0.0
10.1-14.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0      0.0
14.1-18.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0      0.0
18.1-22.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0      0.0
OVER 22.0     0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0      0.0

COL.TOTALS    3.2  4.3 22.6 25.8  3.2  2.2  7.5  4.3  3.2  0.0  6.5  1.1  2.2  0.0  6.5  7.5

CALM          0.0 (    0 HOURS)

AVG. SPEED    4.3  4.2  4.4  3.6  2.7  3.4  3.9  2.7  1.0  0.0  1.9  1.8  1.6  0.0  3.0  3.6

NO. HOURS       3    4   21   24    3    2    7    4    3    0    6    1    2    0    6    7       93
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Table 134

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU   HELENA, MONTANA

SITE : 80062   TAFT SCHOOL—DIURNAL WIND ROSES FOR AUGUST 1982   BILLINGS

TIME PERIOD : AUGUST   1982   HOURS: 19-2100

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	1.1	0.0	0.0	0.0	1.1	1.1	0.0	2.2	4.3	6.5	6.5	3.2	1.1	0.0	0.0	1.1	28.0
1.6- 3.0	3.2	0.0	5.4	6.5	2.2	1.1	0.0	3.2	1.1	3.2	2.2	2.2	1.1	0.0	1.1	0.0	32.3
3.1- 5.0	2.2	0.0	8.6	16.1	2.2	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	32.3
5.1- 8.0	0.0	0.0	1.1	5.4	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	6.5	0.0	15.1	28.0	5.4	2.2	3.2	5.4	5.4	9.7	8.6	5.4	2.2	0.0	1.1	2.2	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.6	0.0	3.4	4.2	2.3	1.8	4.4	1.7	1.5	1.3	1.3	1.5	1.9	0.0	2.1	2.2	
NO. HOURS	6	0	14	26	5	2	3	5	5	9	8	5	2	0	1	2	93

Table 135

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA,MONTANA

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR AUGUST 1982 BILLINGS

TIME PERIOD : AUGUST 1982 HOURS: 22-2400

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	2.2	1.1	1.1	0.0	2.2	2.2	0.0	8.6	7.5	10.8	10.8	4.3	2.2	0.0	0.0	0.0	52.7
1.6- 3.0	2.2	2.2	3.2	2.2	2.2	0.0	0.0	1.1	4.3	2.2	2.2	0.0	2.2	0.0	0.0	2.2	25.8
3.1- 5.0	1.1	1.1	4.3	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	2.2	20.4
5.1- 8.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	5.4	4.3	8.6	12.9	4.3	2.2	0.0	9.7	11.8	12.9	12.9	4.3	4.3	0.0	2.2	4.3	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.4	2.3	3.1	4.1	1.5	1.0	0.0	1.1	1.2	1.1	1.1	0.9	1.3	0.0	3.7	3.1	
NO. HOURS	5	4	8	12	4	2	0	9	11	12	12	4	4	0	2	4	93

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU   HELENA,MONTANA

SITE : 80062   TAFT SCHOOL—DIURNAL WIND ROSES FOR NOVEMBER 1981   BILLINGS

TIME PERIOD : NOVEMBER   1981   HOURS: 1-300

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	1.1	0.0	0.0	0.0	0.0	2.2	5.6	12.2	17.8	16.7	12.2	1.1	0.0	1.1	1.1	71.1
1.6- 3.0	0.0	1.1	0.0	3.3	3.3	0.0	0.0	0.0	5.6	2.2	5.6	1.1	0.0	0.0	1.1	0.0	23.3
3.1- 5.0	1.1	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	1.1	0.0	0.0	0.0	5.6
5.1- 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	1.1	2.2	1.1	3.3	3.3	0.0	2.2	5.6	17.8	20.0	22.2	15.6	2.2	0.0	2.2	1.1	
CALM	0.0 (0 HOURS)																
AVG. SPEED	3.7	1.5	3.2	2.7	2.4	0.0	0.9	1.2	1.4	1.3	1.3	1.5	2.4	0.0	1.8	1.5	
NO. HOURS	1	2	1	3	3	0	2	5	16	18	20	14	2	0	2	1	90

Table 137

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR NOVEMBER 1981 BILLINGS

TIME PERIOD : NOVEMBER 1981 HOURS: 4-600

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	2.2	0.0	1.1	0.0	2.2	0.0	3.3	14.4	16.7	13.3	10.0	2.2	0.0	0.0	1.1	66.7
1.6- 3.0	3.3	0.0	0.0	1.1	0.0	0.0	0.0	0.0	11.1	2.2	1.1	3.3	0.0	0.0	1.1	1.1	24.4
3.1- 5.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.3	1.1	0.0	0.0	0.0	6.7
5.1- 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	0.0	2.2
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	4.4	2.2	0.0	2.2	0.0	2.2	0.0	3.3	25.6	18.9	15.6	16.7	3.3	1.1	2.2	2.2	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.6	1.0	0.0	1.7	0.0	0.9	0.0	0.8	1.5	1.3	1.4	1.8	2.3	5.7	4.2	1.4	
NO. HOURS	4	2	0	2	0	2	0	3	23	17	14	15	3	1	2	2	90

Table 138

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA, MONTANA

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR NOVEMBER 1981 BILLINGS

TIME PERIOD : NOVEMBER 1981 HOURS: 7-900

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	1.1	0.0	0.0	0.0	0.0	0.0	3.3	4.4	6.7	22.2	16.7	6.7	2.2	2.2	1.1	0.0	66.7
1.6- 3.0	1.1	0.0	0.0	1.1	0.0	0.0	0.0	2.2	5.6	10.0	3.3	3.3	1.1	1.1	0.0	1.1	30.0
3.1- 5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	0.0	0.0	3.3
5.1- 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	2.2	0.0	0.0	1.1	0.0	0.0	3.3	6.7	12.2	32.2	20.0	13.3	3.3	3.3	1.1	1.1	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.1	0.0	0.0	2.0	0.0	0.0	1.2	1.2	1.5	1.4	1.3	1.9	1.4	1.4	1.0	1.7	
NO. HOURS	2	0	0	1	0	0	3	6	11	29	18	12	3	3	1	1	90

Table 139

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU HELENA,MONTANA

SITE : 80062   TAFT SCHOOL--DIURNAL WIND ROSES FOR NOVEMBER 1981   BILLINGS

TIME PERIOD : NOVEMBER   1981   HOURS: 10-1200

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	1.1	0.0	2.2	0.0	1.1	0.0	0.0	1.1	4.4	2.2	10.0	2.2	2.2	0.0	0.0	1.1	27.8
1.6- 3.0	0.0	0.0	1.1	2.2	2.2	0.0	0.0	5.6	8.9	10.0	13.3	3.3	3.3	0.0	0.0	0.0	50.0
3.1- 5.0	0.0	0.0	0.0	1.1	1.1	0.0	0.0	0.0	0.0	0.0	6.7	4.4	2.2	0.0	0.0	0.0	15.6
5.1- 3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.3	0.0	6.7
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	1.1	0.0	3.3	3.3	4.4	0.0	0.0	6.7	13.3	12.2	30.0	10.0	7.8	3.3	3.3	1.1	
CALM	0.0 (0 HOURS)																
AVG. SPEED	0.9	0.0	1.4	3.1	1.9	0.0	0.0	1.8	1.7	1.8	2.1	2.8	2.3	5.7	5.7	1.3	
NO. HOURS	1	0	3	3	4	0	0	6	12	11	27	9	7	3	3	1	90

Table 140

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA,MONTANA

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR NOVEMBER 1981 BILLINGS

TIME PERIOD : NOVEMBER 1981 HOURS: 13-1500

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	0.0	1.1	0.0	2.2	0.0	1.1	3.3	3.3	2.2	2.2	0.0	1.1	0.0	0.0	0.0	16.7
1.6- 3.0	0.0	0.0	2.2	3.3	0.0	1.1	2.2	3.3	2.2	2.2	12.2	10.0	0.0	0.0	0.0	2.2	41.1
3.1- 5.0	0.0	1.1	2.2	4.4	0.0	0.0	0.0	0.0	0.0	0.0	2.2	13.3	4.4	0.0	3.3	0.0	31.1
5.1- 8.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	3.3	2.2	11.1
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	0.0	1.1	7.8	7.8	2.2	1.1	3.3	6.7	5.6	4.4	16.7	23.3	5.6	3.3	6.7	4.4	
CALM	0.0 (0 HOURS)																
AVG. SPEED	0.0	3.5	3.5	3.3	1.3	1.6	1.8	1.4	1.3	1.6	2.2	3.3	3.5	5.5	5.1	4.1	
NO. HOURS	0	1	7	7	2	1	3	6	5	4	15	21	5	3	6	4	90

Table 141

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES   AIR QUALITY BUREAU HELENA,MONTANA

SITE : 80062   TAFT SCHOOL--DIURNAL WIND ROSES FOR NOVEMBER 1981   BILLINGS

TIME PERIOD : NOVEMBER 1981 HOURS: 16-1800

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	0.0	1.1	0.0	0.0	2.2	1.1	0.0	3.3	5.6	6.7	4.4	0.0	1.1	0.0	0.0	25.6
1.6- 3.0	1.1	0.0	2.2	5.6	0.0	0.0	0.0	0.0	1.1	4.4	4.4	15.6	10.0	1.1	0.0	0.0	45.6
3.1- 5.0	1.1	1.1	4.4	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.2	3.3	1.1	0.0	24.4
5.1- 8.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	1.1	4.4
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	2.2	1.1	10.0	15.6	0.0	2.2	1.1	0.0	4.4	10.0	11.1	21.1	12.2	6.7	1.1	1.1	
CALM	0.0 (0 HOURS)																
AVG. SPEED	3.8	4.9	3.9	3.4	0.0	1.0	1.5	0.0	1.2	1.5	1.6	1.9	2.4	3.8	3.4	5.7	
NO. HOURS	2	1	9	14	0	2	1	0	4	9	10	19	11	6	1	1	90

Table 142

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR NOVEMBER 1981 BILLINGS

TIME PERIOD : NOVEMBER, 1981 HOURS: 19-2100

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	0.0	0.0	1.1	2.2	0.0	0.0	2.2	2.2	13.3	11.1	6.7	3.3	0.0	0.0	0.0	0.0	42.2
1.6- 3.0	0.0	0.0	3.3	4.4	1.1	1.1	0.0	0.0	21.1	6.7	2.2	3.3	0.0	0.0	0.0	0.0	43.3
3.1- 5.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.2	0.0	1.1	0.0	14.4
5.1- 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL. TOTALS	0.0	0.0	4.4	16.7	1.1	1.1	2.2	2.2	34.4	17.8	8.9	7.8	2.2	0.0	1.1	0.0	
CALM	0.0 (0 HOURS)																
AVG. SPEED	0.0	0.0	2.3	3.3	1.6	1.6	0.7	0.8	1.6	1.4	1.4	2.0	4.1	0.0	3.9	0.0	
NO. HOURS	0	0	4	15	1	1	2	2	31	16	8	7	2	0	1	0	90

Table 143

MONTANA STATE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AIR QUALITY BUREAU HELENA,MONTANA

SITE : 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR NOVEMBER 1981 BILLINGS

TIME PERIOD : NOVEMBER 1981 HOURS: 22-2400

SURFACE WIND ROSE FREQUENCY TABLE

DIR SPEED	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	TOTAL
0.1- 1.5	1.1	0.0	0.0	2.2	1.1	1.1	0.0	0.0	10.0	16.7	8.9	3.3	0.0	2.2	1.1	0.0	47.8
1.6- 3.0	0.0	1.1	2.2	3.3	2.2	0.0	0.0	2.2	18.9	8.9	2.2	1.1	1.1	0.0	0.0	1.1	44.4
3.1- 5.0	1.1	1.1	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	1.1	0.0	0.0	0.0	6.7
5.1- 8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	1.1
8.1-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.1-14.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14.1-18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18.1-22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OVER 22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COL.TOTALS	2.2	2.2	2.2	6.7	3.3	1.1	0.0	2.2	28.9	25.6	11.1	6.7	3.3	2.2	1.1	1.1	
CALM	0.0 (0 HOURS)																
AVG. SPEED	2.2	2.7	2.3	2.1	2.3	0.6	0.0	1.9	1.6	1.4	1.2	1.9	3.7	1.4	1.4	2.5	
NO. HOURS	2	2	2	6	3	1	0	2	26	23	10	6	3	2	1	1	90

Table 144

TABLE 145

BILLINGS INDUSTRIES
MASS EMISSIONS BY SOURCE

TONS - SO2

SOURCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
MPCO-COR	930	780	0	0	0	0	90	270	810	930	900	750	5460
CON - B.P.	191	173	191	185	191	185	191	191	185	191	185	191	2256
CON - FCC	118	106	118	91	118	114	118	118	114	118	114	118	1347
GT WEST	121	90	0	0	0	0	0	0	0	113	117	121	563
EXX - CAT	349	315	349	236	33	214	349	349	338	349	338	180	3315
EXX - COKE	169	153	109	131	169	164	109	169	164	169	164	169	1842
EXX - F-2	259	234	259	251	259	251	259	259	251	117	251	259	2913
EXX - F-3	0	20	0	0	0	0	0	0	0	10	0	0	31
EXX - F-3X	0	12	0	0	0	0	0	0	4	6	0	0	18
EXX - F-5	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-651	0	0	0	0	0	0	0	0	0	0	0	0	0
EXX - F-700	19	17	19	18	19	0	0	0	0	19	18	19	150
MT SULF	214	193	214	207	214	207	214	214	207	214	207	214	2527
TOTALS	2370	2093	1259	1119	1003	1135	1330	1570	2073	2236	2294	2021	20442

SOURCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
CEN - #3	127	122	136	131	105	131	136	136	131	136	131	136	1563
CEN - #4	131	118	131	97	131	127	131	131	127	131	127	131	1517
CEN - #5	131	118	131	105	105	127	131	131	127	131	127	131	1500
CEN - CR-MN	44	40	44	85	35	42	44	44	42	44	42	44	512
CEN - CR-PR	15	13	15	14	12	14	15	15	14	15	14	15	174
CEN - AL-HT	13	12	13	1	11	13	13	13	13	13	13	13	149
CEN - SUL-P	88	80	88	71	71	85	88	88	85	88	85	88	1011
CEN - FCC	223	201	223	28	180	216	216	216	208	223	216	208	2368
TOTALS	772	704	781	532	650	775	774	774	747	781	755	766	8794

TABLE 146

BILLINGS INDUSTRIES
MASS EMISSIONS BY SOURCE

PERCENT - SO2

SOURCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
MPCO-COR	39.2	37.2	.0	.0	.0	.0	6.7	17.1	39.0	41.5	39.2	37.1	26.7
CON - B.P.	8.0	8.2	15.1	16.5	19.0	16.2	14.3	12.1	8.9	8.5	8.0	9.4	11.0
CON - FCC	4.9	5.0	9.3	8.1	11.7	10.0	8.8	7.5	5.4	5.2	4.9	5.8	6.6
GT WEST	5.1	4.3	.0	.0	.0	.0	.0	.0	.0	5.0	5.1	5.9	2.7
EXX - CAT	14.7	15.0	27.7	21.0	3.2	18.8	26.2	22.2	16.3	15.6	14.7	8.9	16.2
EXX - COKE	7.1	7.3	8.6	11.7	16.8	14.4	8.1	10.7	7.9	7.5	7.1	8.3	9.0
EXX - F-2	10.9	11.1	20.5	22.4	25.8	22.1	19.4	16.4	12.1	5.2	10.9	12.8	14.2
EXX - F-3	.0	.9	.0	.0	.0	.0	.0	.0	.0	.4	.0	.0	.1
EXX - F-3X	.0	.5	.0	.0	.0	.0	.0	.0	.1	.2	.0	.0	.1
EXX - F-5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
EXX - F-651	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
EXX - F-700	.8	.8	1.5	1.6	1.8	.0	.0	.0	.0	.8	.7	.9	.7
MT SULF	9.0	9.2	16.9	18.4	21.3	18.2	16.0	13.6	9.9	9.5	9.0	10.5	12.3
TOTALS	99.7	99.5	99.6	99.7	99.6	99.7	99.5	99.6	99.6	99.4	99.6	99.6	99.6

SOURCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
CEN - #3	16.4	17.3	17.4	24.6	16.1	17.3	17.5	17.5	17.5	17.4	17.3	17.7	17.7
CEN - #4	16.9	16.7	16.7	18.2	20.1	16.8	16.9	16.9	17.0	16.7	16.8	17.1	17.2
CEN - #5	16.9	16.7	16.7	19.7	16.1	16.8	16.9	16.9	17.0	16.7	16.8	17.1	17.0
CEN - CR-MN	5.6	5.6	5.6	15.9	5.3	5.5	5.6	5.6	5.6	5.6	5.5	5.7	5.8
CEN - CR-PR	1.9	1.8	1.9	2.6	1.8	1.8	1.9	1.9	1.8	1.9	1.8	1.9	1.9
CEN - AL-HT	1.6	1.7	1.6	.1	1.6	1.7	1.6	1.6	1.7	1.6	1.7	1.6	1.6
CEN - SUL-P	11.3	11.3	11.2	13.3	10.9	11.2	11.3	11.3	11.3	11.2	11.2	11.4	11.4
CEN - FCC	28.8	28.5	28.5	5.2	27.6	28.6	27.9	27.9	27.8	28.5	28.6	27.1	26.9
TOTALS	99.4	99.6	99.6	99.6	99.5	99.7	99.6	99.6	99.7	99.6	99.7	99.6	99.5

TABLE 147

BILLINGS INDUSTRIES
MASS EMISSIONS BY INDUSTRY

TONS - SO2

INDUSTRY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
MPCO	930	780	0	0	0	0	90	270	810	930	900	750	5460
CONOCO	309	279	309	276	309	299	309	309	299	309	299	309	3603
GT WEST	121	90	0	0	0	0	0	0	0	113	117	121	563
EXXON	796	751	736	636	480	629	717	777	757	670	771	627	8269
MT SULF	214	193	214	207	214	207	214	214	207	214	207	214	2527
CENEX	772	704	781	532	650	775	774	774	747	781	755	766	8794

TABLE 148

BILLINGS INDUSTRIES
MASS EMISSIONS BY INDUSTRY

PERCENT* - SO2

INDUSTRY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
MPCO	39.2	37.2	.0	.0	.0	.0	6.7	17.1	39.0	41.5	39.2	37.1	26.7
CONOCO	13.0	13.3	24.5	24.6	30.8	26.3	23.2	19.6	14.4	13.8	13.0	15.2	17.6
GT WEST	5.1	4.3	.0	.0	.0	.0	.0	.0	.0	5.0	5.1	5.9	2.7
EXXON	33.5	35.8	58.4	56.8	47.8	55.4	53.9	49.4	36.5	29.9	33.6	31.0	40.4
MT SULF	9.0	9.2	16.9	18.4	21.3	18.2	16.0	13.6	9.9	9.5	9.0	10.5	12.3
CENEX	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Billings and Laurel sources were kept separate for percent calculations.

TABLE 149

MEANS AND CORRELATION FACTORS
MONTHLY TONS OF SO_2 EMISSIONS* VS. MONTHLY SO_2 AVERAGES

Site	$\overline{M}$ Annual Average** PPB	R Monthly Tons w/ Monthly Average
061	6.2 (6.3)	.459 [5]
062	11.4 (12.7)	.679 [12]
063	20.6 (20.2)	.700 [12]
064	22.3 (22.1)	.868 [12]
065	22.8 (22.9)	.854 [12]
066	29.0 (29.2)	.901 [12]
014	8.0 (7.7)	.633 [9]
015	10.2 (10.2)	.916 [12]

* Billings sources only.
** Based on 12 monthly readings.
( ) Actual annual average.
[ ] Number of pairs.

TABLE 150

MODEL OUTPUT -
CHI-MAX, RANK, AND EFFECTIVE PLUME HEIGHT

SOURCE	RANK	CHI - MAX UG/M3	EFFECTIVE HEIGHT (M)	STACK HEIGHT (M)	PLUME RISE (M)
MPCO-COR	11	92.2	485.8	106.7	379.1
CON - B.P.	10	92.9	202.0	82.3	119.7
CON - FCC	13	73.1	176.6	53.6	123.0
GT WEST	8	113.7	140.5	36.6	103.9
EXX - CAT	3	145.5	219.7	63.4	156.3
EXX - COKE	9	93.0	188.6	64.0	124.6
EXX - F-2	7	114.4	212.9	64.0	148.9
EXX - F-700	16	19.8	133.2	63.4	69.8
MT SULF	1	568.4	79.3	30.5	48.8
CEN - #3	5	124.2	142.6	60.8	81.8
CEN - #4	6	118.7	143.4	60.8	82.6
CEN - #5	4	132.0	135.2	60.8	74.4
CEN - CR-MN	14	45.6	133.3	60.8	72.5
CEN - CR-PR	15	20.6	114.0	26.5	87.5
CEN - AL-HT	17	13.8	135.7	30.5	105.2
CEN - SUL-P	2	172.0	94.0	60.8	33.2
CEN - FCC	12	92.1	220.8	60.7	160.1

TABLE 151

Means and Correlation Factors
Twenty-Four Hour Averages
Actual vs. Modeled

January, 1982

Site	$\overline{M}$ (N) Actual PPB	$\overline{M}$ Complex 1 PPB	$\overline{M}$ Complex 2 PPB	R Actual W/ Complex 1	R Actual W/ Complex 2
All	24.1 (226)	6.3	6.8	.292	.185
061	6.0 (31)	11.9	16.0	-.309	-.295
062	22.7 (31)	4.3	4.5	.391	.397
063	26.0 (26)	8.6	9.4	.705	.728
064	21.7 (31)	3.4	3.4	.699	.667
065	25.9 (31)	2.3	2.4	.598	.471
066	52.1 (31)	11.7	10.9	.452	.409
014	16.1 (17)	3.6	3.4	.344	.215
015	18.3 (28)	5.0	4.2	-.175	-.099

TABLE 152

Means and Correlation Factors
Twenty-Four Hour Averages
Actual vs. Modeled

May, 1982

Site	$\overline{M}$ (N) Actual PPB	$\overline{M}$ Complex 1 PPB	$\overline{M}$ Complex 2 PPB	R Actual W/ Complex 1	R Actual W/ Complex 2
All	8.2 (208)	4.0	3.8	.388	.381
061	---	4.9	4.8	---	---
062	6.0 (25)	2.2	2.2	.447	.378
063	13.2 (31)	5.6	5.9	.474	.491
064	7.7 (31)	3.1	3.0	.265	.216
065	14.2 (31)	5.3	4.8	.365	.394
066	7.0 (30)	4.6	3.7	.134	.122
014	4.9 (31)	2.8	2.8	.459	.400
015	3.7 (29)	3.7	3.4	.379	.352

TABLE 153

Means and Correlation Factors
Twenty-Four Hour Averages
Actual vs. Modeled

August, 1982

Site	$\overline{M}$ (N) Actual PPB	$\overline{M}$ Complex 1 PPB	$\overline{M}$ Complex 2 PPB	R Actual W/ Complex 1	R Actual W/ Complex 2
All	18.0 (177)	8.2	8.6	.143	.105
061	---	10.6	12.1	---	---
062	12.2 (22)	5.5	5.2	.704	.529
063	12.1 (31)	9.5	9.7	.489	.427
064	21.0 (31)	9.2	9.2	.621	.590
065	23.1 (31)	3.9	4.3	.178	.239
066	28.2 (31)	11.3	12.5	-.003	-.110
014	---	3.3	3.6	---	---
015	9.5 (31)	12.6	12.2	-.002	.009

TABLE 154

Means and Correlation Factors
Twenty-Four Hour Averages
Actual vs. Modeled

November, 1981

Site	$\overline{M}$ (N) Actual PPB	$\overline{M}$ Complex 1 PPB	$\overline{M}$ Complex 2 PPB	R Actual W/ Complex 1	R Actual W/ Complex 2
All	28.0 (201)	5.5	5.7	.357	.371
061	---	4.6	5.6	---	---
062	12.3 (30)	2.4	2.7	.032	-.029
063	30.7 (30)	10.6	10.9	.435	.379
064	41.2 (30)	5.4	5.5	.448	.420
065	29.4 (30)	3.4	3.2	.170	.009
066	54.2 (30)	12.8	12.8	-.180	.088
014	8.1 (21)	1.1	1.2	-.387	-.306
015	14.4 (30)	4.1	3.5	.096	.077

TABLE 155

MODELING RESULTS FOR JANUARY, 1982 USING COMPLEX II

PERCENT CONTRIBUTION BY SOURCE

INDUSTRY	B061	B062	B063	B064	B065	B066	L014	L015
MPCO - COR	.0	.0	.8	.7	.0	.0	.0	.0
CON - B.P.	.1	.3	15.2	1.9	15.7	.0	2.6	5.5
CON - FCC	.4	.3	14.0	1.9	17.3	.0	1.9	4.0
GT WEST	.1	.0	9.2	3.5	13.4	1.4	.2	1.5
EXX - CAT	.1	.1	.0	1.8	.5	12.5	11.7	9.6
EXX - COKE	.1	.1	.0	1.7	.3	7.9	6.6	5.5
EXX - F-2	.1	.1	.0	1.6	.4	10.1	9.1	7.6
EXX - F-700	.0	.5	.0	1.2	.0	1.3	.9	.7
MT SULF	86.5	90.8	32.7	66.0	6.8	64.4	14.7	25.2
CEN - #3	2.2	1.3	4.9	3.5	8.0	.3	1.6	2.8
CEN - #4	2.1	1.3	4.8	3.3	7.7	.3	1.5	2.7
CEN - #5	2.2	1.3	4.9	3.4	7.8	.3	2.0	3.7
CEN - CR-MN	.7	.4	1.6	1.1	2.6	.1	.6	1.2
CEN - CR-PR	.2	.1	.6	.4	1.0	.0	.5	1.4
CEN - AL-MT	.2	.1	.5	.3	.8	.0	.2	.6
CEN - SUL-P	1.8	1.1	3.8	2.7	6.3	.3	44.5	26.5
CEN - FCC	2.5	1.5	6.3	4.2	9.9	.4	.6	.6

MONTHLY AVERAGE

	B061	B062	B063	B064	B065	B066	L014	L015
Modeled (ppb)	9.9	14.8	3.2	4.8	2.1	46.1	1.7	4.5
Actual (ppb)	6.0	23.0	26.0	21.0	26.0	52.0	16.0	19.0

TABLE 156
DIRECTION ANALYSIS SUMMARY
COBURN ROAD

Area(s)	Month	Direction	Strength Factor (%)	Area(s)	Month	Direction	Strength Factor (%)
A & B	January, 1982	SSW	1.1	A & B	August, 1982	SSW	4.1
		SW	15.5			SW	5.3
		WSW	37.4			WSW	20.3
		W	2.7			W	4.9
			56.7				34.6
C		NNE	10.3	C		N	3.1
		NE	13.2			NNE	11.8
		ENE	7.8			NE	28.8
		E	7.4			ENE	5.2
			38.7				48.9
A & B	May, 1982	SSW	3.6	A & B	November, 1981	SSW	1.4
		SW	8.4			SW	40.4
		WSW	29.0			WSW	37.5
		W	10.0			W	2.1
			51.0				81.4
C		NNW	8.1	C		N	.6
		N	7.2			NNE	2.8
		NNE	12.0			NE	5.6
		NE	6.1			ENE	.7
			33.4				9.7

TABLE 157

Direction Analysis -- SW Summary

January, 1982

	Percent Strength Factor			Ratios	
Direction	Laurel BN	Taft School	Coburn Road	Taft (SW) / Laurel (SW)	Taft (SW) / Coburn (Total)
SSW	1.6	7.8	1.1		
SW	35.4	5.0	15.5		
WSW	18.1	4.6	37.4		
W	3.2	3.1	2.7		
Total (%)	58.3	20.5	56.7		
Monthly Average (ppb)	18.9	21.8	50.9		
% X Mo. Ave./100 (ppb)	11.0	4.4	28.8		
Ratio (ppb/ppb)				0.400	0.086

TABLE 158

Direction Analysis -- SW Summary

May, 1982

Direction	Percent Strength Factor Laurel BN	 Taft School	 Coburn Road	Ratios $\frac{\text{Taft (SW)}}{\text{Laurel (SW)}}$	 $\frac{\text{Taft (SW)}}{\text{Coburn (Total)}}$
S	--	4.2	--		
SSW	2.3	3.9	3.6		
SW	36.3	2.8	8.4		
WSW	18.8	5.3	29.0		
W	8.1	--	10.0		
Total (%)	65.5	16.2	51.0		
Monthly Average (ppb)	3.6	6.1	6.4		
% X Mo. Ave./100 (ppb)	2.3	1.0	3.1		
Ratio (ppb/ppb)				0.434	0.156

TABLE 159

Direction Analysis -- SW Summary

August, 1982

Direction	Percent Strength Factor Laurel BN	 Taft School	 Coburn Road	Ratios $\frac{\text{Taft (SW)}}{\text{Laurel (SW)}}$	 $\frac{\text{Taft (SW)}}{\text{Coburn (Total)}}$
S	8.8	5.8	1.1		
SSW	13.1	8.1	4.1		
SW	22.0	11.3	5.3		
WSW	15.9	4.0	20.3		
W	--	--	4.9		
Total (%)	59.8	29.2	35.7		
Monthly Average (ppb)	9.9	12.4	27.5		
% X Mo. Ave./100 (ppb)	5.9	3.6	9.8		
Ratio (ppb/ppb)				0.610	0.130

TABLE 160

Direction Analysis -- SW Summary

November, 1981

	Percent Strength Factor			Ratios	
Direction	Laurel BN	Taft School	Coburn Road	$\frac{\text{Taft (SW)}}{\text{Laurel (SW)}}$	$\frac{\text{Taft (SW)}}{\text{Coburn (Total)}}$
S	0.6	16.5	1.4		
SSW	1.6	14.0	1.4		
SW	46.8	16.2	40.4		
WSW	27.8	9.8	37.5		
W	5.5	--	--		
Total (%)	82.3	56.5	80.7		
Monthly Average (ppb)	14.3	12.2	53.9		
% X Mo. Ave./100 (ppb)	11.7	6.9	43.4		
Ratio (ppb/ppb)				0.589	0.128

TABLE 161

DIRECTION ANALYSIS SUMMARY

LAUREL-BN

Area(s)	Month	Direction	Strength Factor (%)	Area(s)	Month	Direction	Strength Factor (%)
A	January, 1982	SSW	1.6	A	August, 1982	S	8.8
		SW	35.4			SSW	13.1
		WSW	18.1			SW	22.0
		W	3.2			WSW	15.9
			58.3				59.8
B & C		NNE	3.3	B & C		NNE	7.6
		NE	26.6			NE	9.3
		ENE	8.2			ENE	2.3
			38.1				19.2
A	May, 1982	SSW	2.3	A	November, 1981	SSW	1.6
		SW	36.3			SW	46.8
		WSW	18.8			WSW	27.8
		W	8.1			W	5.5
			65.5				81.7
B & C		NNE	3.2	B & C		NNE	3.0
		NE	13.4			NE	4.5
		ENE	4.7			ENE	2.1
			21.3				9.6

Figures

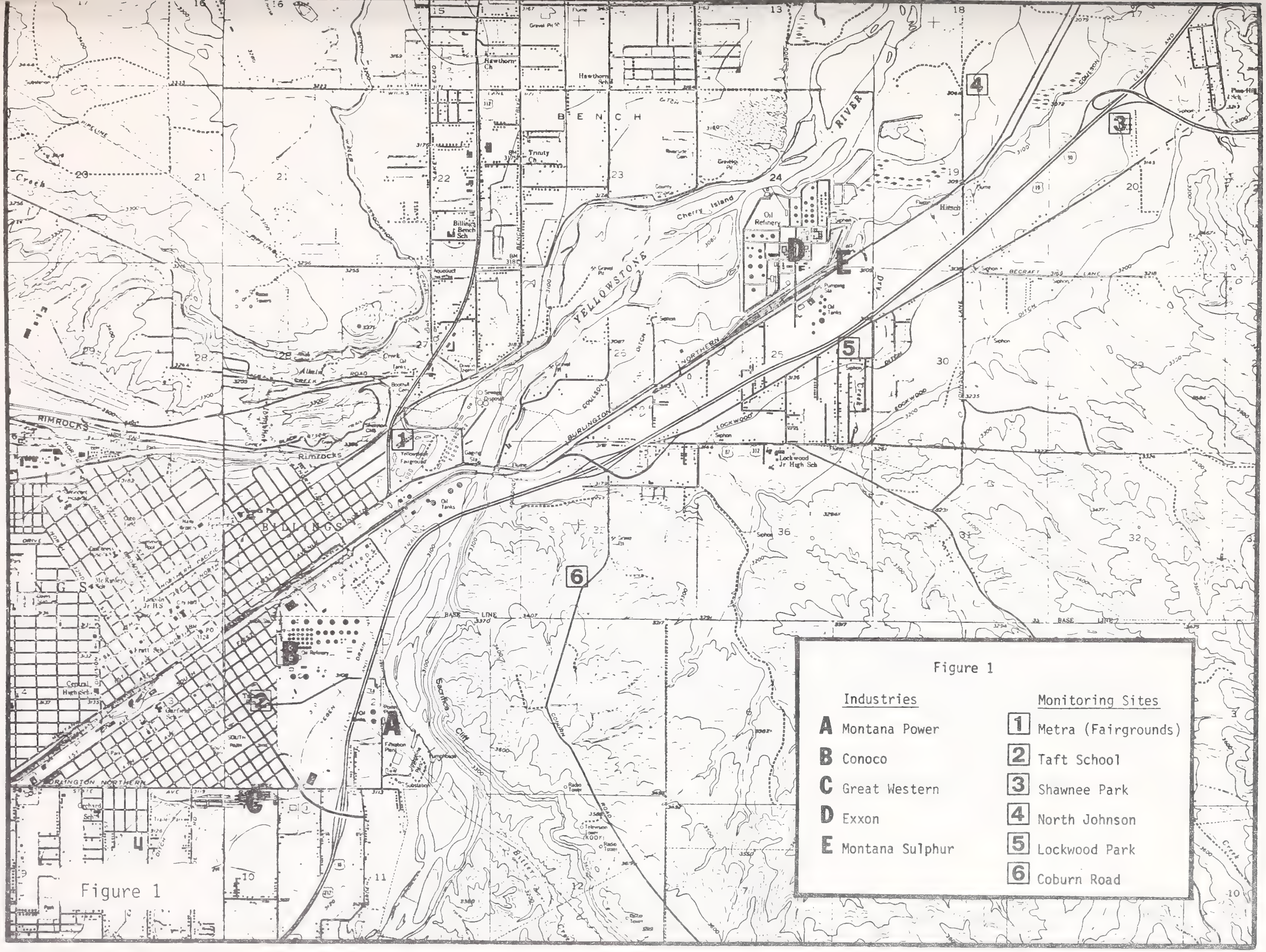


Figure 1

Figure 1
Industries
A Montana Power
B Conoco
C Great Western
D Exxon
E Montana Sulphur
Monitoring Sites
1 Metra (Fairgrounds)
2 Taft School
3 Shawnee Park
4 North Johnson
5 Lockwood Park
6 Coburn Road
BENCH
YELLOWSTONE
RIVER
Cherry Island
Oil Refinery
BILLINGS
RIMROCKS
Rimrocks
Sacrifice Cliff
NORTHERN PACIFIC
BURLINGTON NORTHERN
STOCKYARDS
BASE LINE
COBURN ROAD
LOCKWOOD
Lockwood Jr High Sch
BECRAFT LANE
Billings Bench Sch
Hawthorn Ch
Hawthorn Sch
Trinity Ch
Yellowstone Fairgrounds
Oil Tanks
Central High Sch
Dry Creek
Alkali Creek

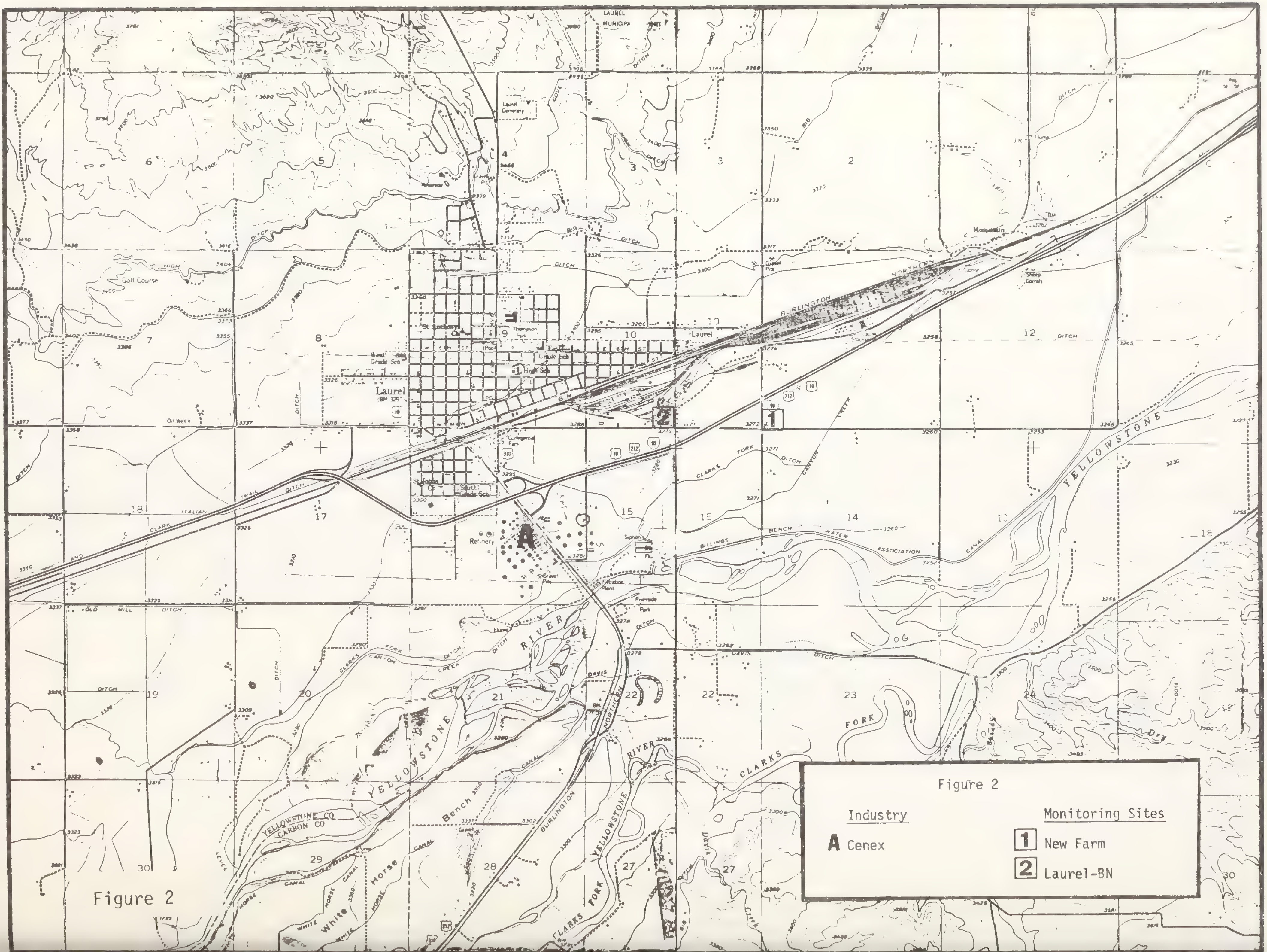
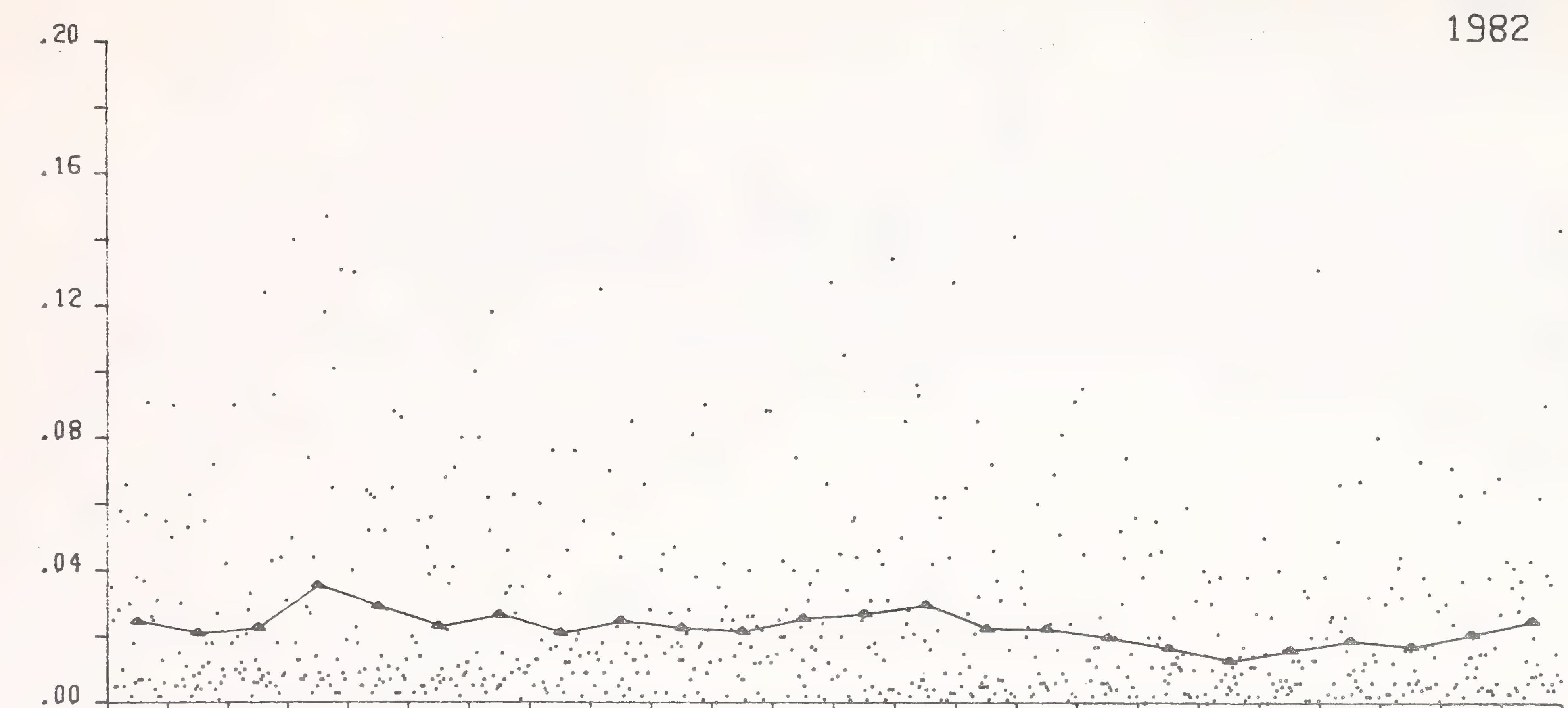


Figure 2
Industry
A Cenex
Monitoring Sites
1 New Farm
2 Laurel-BN
Laurel
YELLOWSTONE
RIVER
CLARKS FORK
BURLINGTON NORTHERN
BILLINGS BENCH WATER ASSOCIATION CANAL
Refinery
Golf Course
Laurel Cemetery
White Horse Bench
YELLOWSTONE CO
CARBON CO

Figure 2

JANUARY
1982



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	31	31	31	31	31	31	31	30	29	29	29	29	30	31	30	29	30	31	31	31	31	31	31	31
1-HIGH	.091	.090	.124	.147	.130	.080	.118	.076	.125	.090	.088	.127	.134	.127	.141	.091	.095	.059	.040	.131	.080	.073	.071	.143
2-HIGH	.066	.072	.093	.140	.088	.071	.100	.076	.085	.081	.088	.074	.105	.096	.085	.081	.074	.055	.038	.050	.067	.044	.068	.090
HR.AVG	.025	.021	.023	.036	.029	.023	.027	.021	.025	.023	.022	.026	.027	.030	.022	.022	.020	.017	.013	.016	.019	.017	.021	.025

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . .0080, YELLOWSTONE CO
SITE. . . . . . .062, TAFT SCHOOL
CITY. . . . . . .BILLINGS

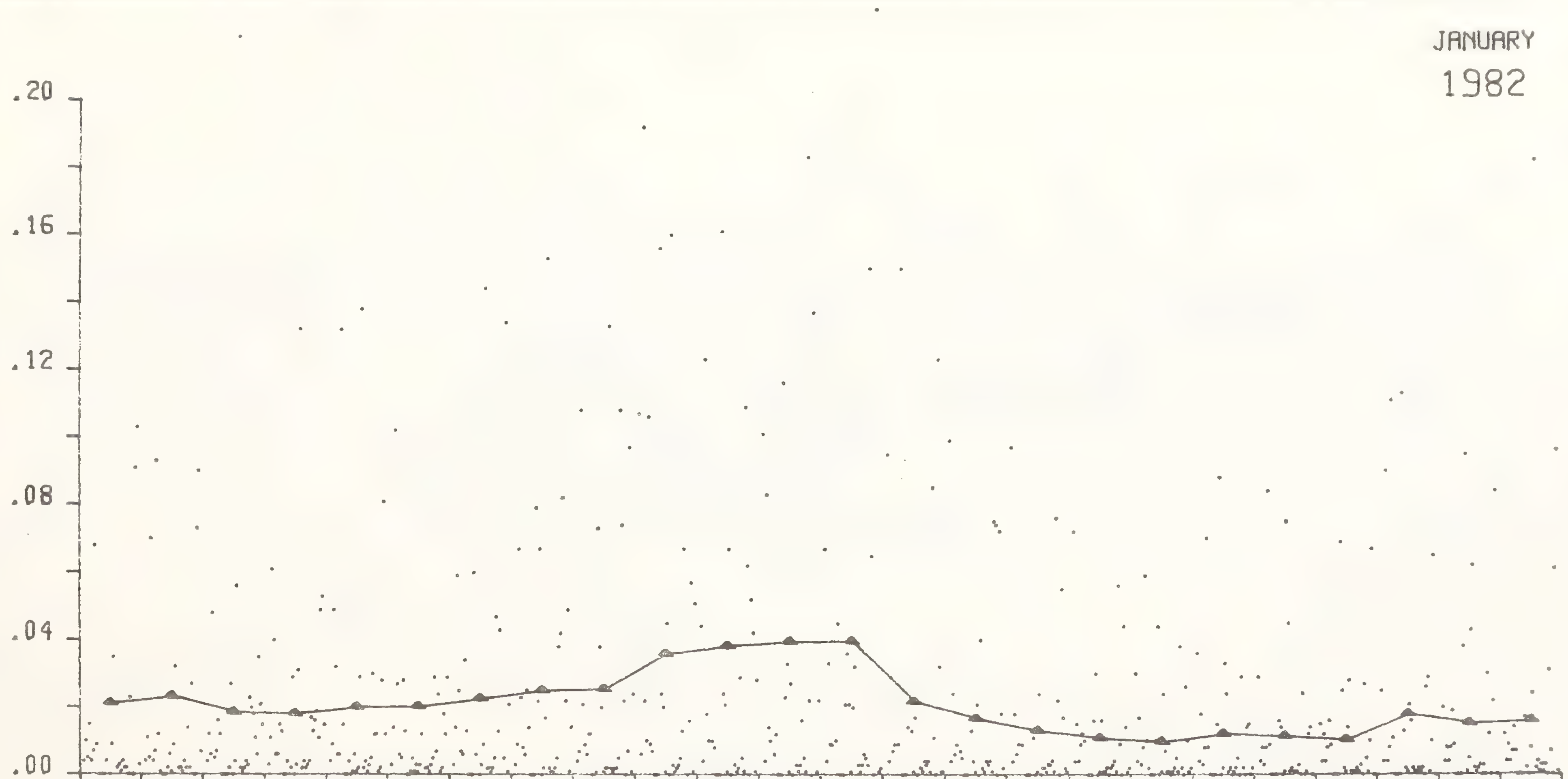
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 3

JANUARY
1982



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	31	31	31	31	31	31	30	30	31	30	30	29	29	29	29	28	30	31	31	31	31	31	31	31
1-HIGH	.236	.244	.219	.132	.138	.273	.144	.153	.133	.192	.328	.326	.381	.150	.099	.097	.072	.059	.088	.084	.069	.113	.095	.182
2-HIGH	.103	.093	.056	.061	.132	.102	.134	.082	.108	.160	.161	.183	.227	.123	.075	.076	.056	.044	.070	.075	.067	.111	.084	.096
HR.AVG	.021	.023	.019	.018	.020	.020	.023	.025	.026	.036	.038	.040	.040	.022	.017	.013	.011	.010	.012	.011	.011	.018	.015	.016

PLOT. . . . . . .CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . .PULSED FLUORESCENT
UNITS . . . . . .PARTS PER MILLION
STANDARDS . . .(STATE) .50 PPM 1-HR AVG

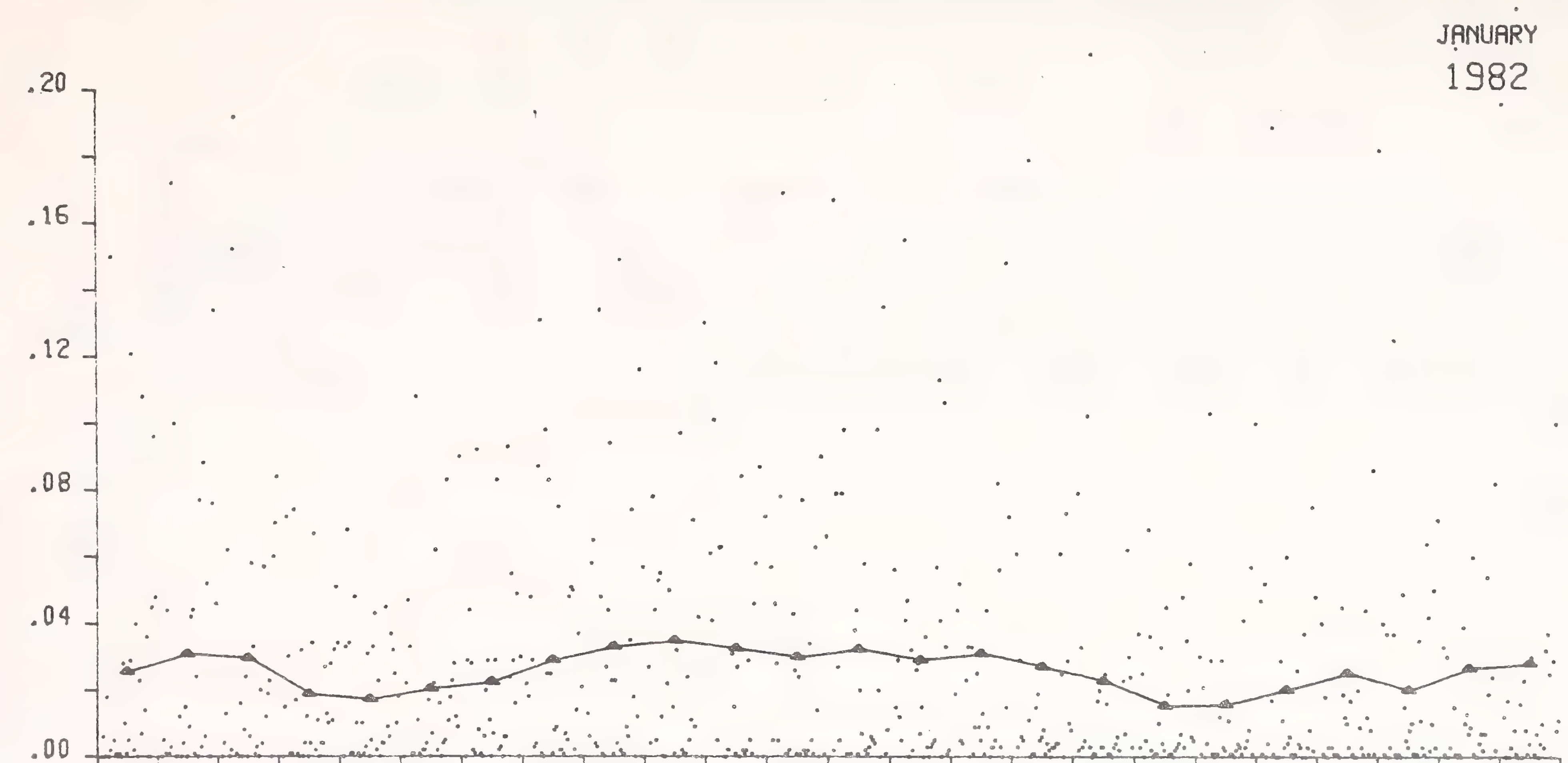
PARAMETER . .SULFUR DIOXIDE
AREA. . . . . .0080, YELLOWSTONE CO
SITE. . . . . .064, NORTH JOHNSON LANE
CITY. . . . . .BILLINGS

MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 4



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	31	31	31	31	31	31	31	31	31	31	28	28	28	30	31	31	30	31	31	31	31	31	31	31
1-HIGH	.150	.172	.192	.074	.068	.108	.093	.131	.149	.257	.118	.169	.167	.155	.249	.267	.211	.068	.103	.189	.243	.125	.213	.261
2-HIGH	.121	.134	.152	.072	.048	.090	.092	.098	.134	.130	.101	.090	.135	.113	.148	.179	.102	.058	.100	.075	.182	.071	.196	.225
HR.AVG	.026	.031	.030	.019	.017	.021	.023	.029	.033	.035	.033	.030	.033	.029	.031	.027	.023	.016	.016	.020	.025	.020	.027	.028

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

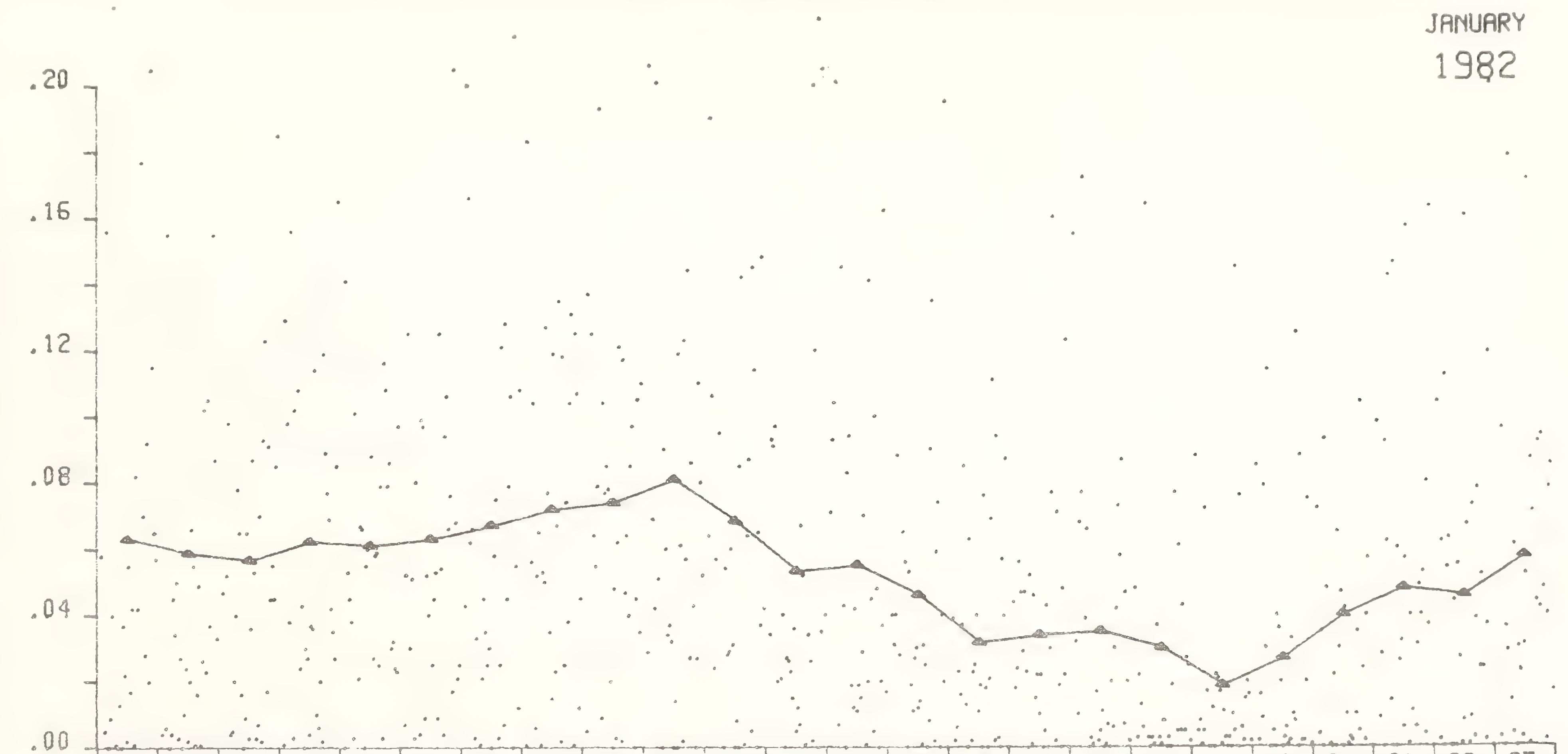
PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0080, YELLOWSTONE CO
SITE. . . . . . 065, LOCKWOOD PARK
CITY. . . . . . BILLINGS

MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 5



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	30	31	31	31	30	30	31	31	31	31	29	29	30	31	31	31	30	29	31	30	29	30	31	30
1-HIGH	.259	.392	.260	.241	.254	.256	.250	.285	.284	.359	.304	.220	.201	.237	.111	.160	.172	.280	.145	.125	.409	.163	.200	.294
2-HIGH	.224	.290	.185	.165	.141	.205	.215	.183	.193	.357	.190	.205	.162	.195	.094	.123	.155	.164	.088	.114	.104	.157	.160	.178
HR.AVG	.063	.059	.057	.062	.061	.063	.067	.072	.074	.081	.068	.053	.055	.046	.032	.034	.035	.030	.019	.027	.040	.048	.046	.058

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0080, YELLOWSTONE CO
SITE. . . . . . 066, COBURN ROAD
CITY. . . . . . BILLINGS

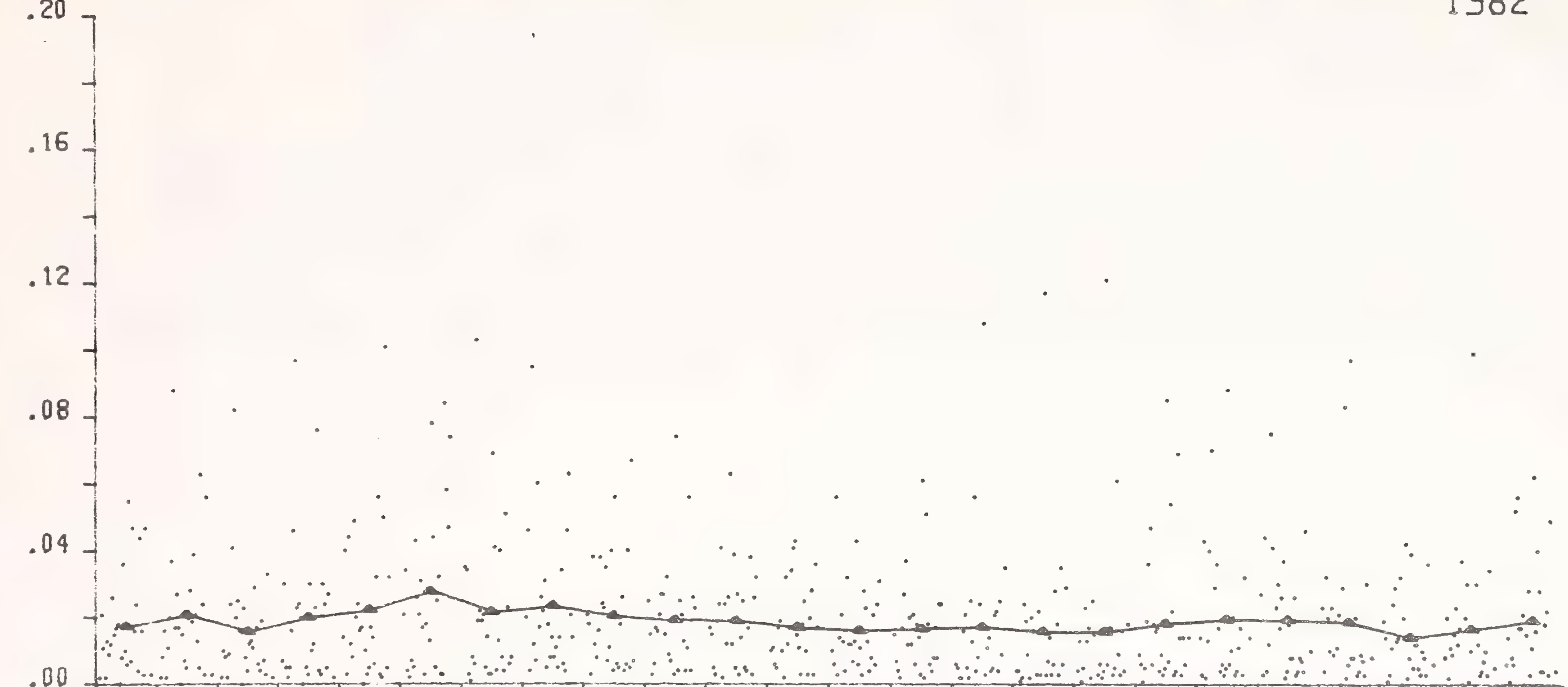
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 6

JANUARY
1982



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	27	27	27	27	26	26	26	26	26	26	26	26	26	26	26	25	26	27	25	25	26	26	26	26
1-HIGH	.055	.088	.082	.097	.101	.084	.103	.095	.067	.074	.063	.043	.056	.061	.108	.117	.121	.085	.088	.075	.097	.042	.099	.062
2-HIGH	.047	.063	.041	.076	.056	.078	.069	.063	.056	.056	.041	.041	.043	.051	.056	.035	.061	.069	.070	.046	.083	.039	.037	.056
HR.AVG	.017	.021	.016	.020	.022	.028	.022	.023	.021	.019	.019	.017	.016	.017	.017	.016	.016	.018	.020	.019	.019	.014	.017	.019

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0840, YELLOWSTONE CO
SITE. . . . . . 015, LAUREL BN
CITY. . . . . . LAUREL

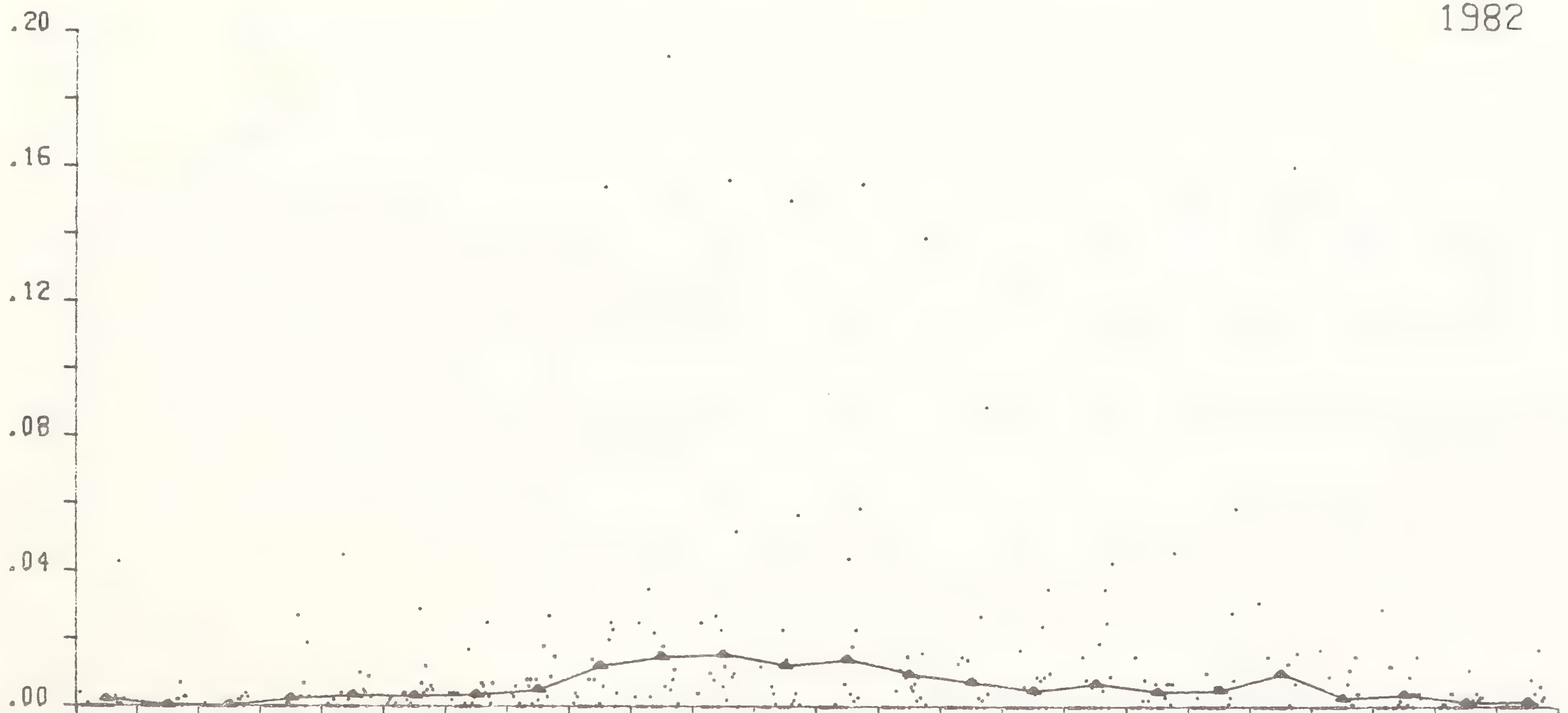
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 7

MAY
1982



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	25	25	25	25	25	25	24	23	23	23	22	22	22	23	24	24	24	24	24	24	24	24	24	24
1-HIGH	.043	.007	.004	.027	.045	.029	.025	.027	.154	.193	.156	.150	.155	.139	.089	.035	.043	.046	.059	.160	.017	.029	.011	.017
2-HIGH	.004	.003	.003	.019	.010	.012	.017	.018	.025	.035	.052	.057	.059	.016	.027	.024	.035	.015	.028	.031	.015	.015	.004	.008
HR.AVG	.002	.001	.001	.003	.004	.003	.004	.005	.012	.015	.016	.012	.014	.010	.008	.005	.007	.005	.005	.010	.003	.004	.002	.002

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . .0080, YELLOWSTONE CO
SITE. . . . . . .062, TAFT SCHOOL
CITY. . . . . . BILLINGS

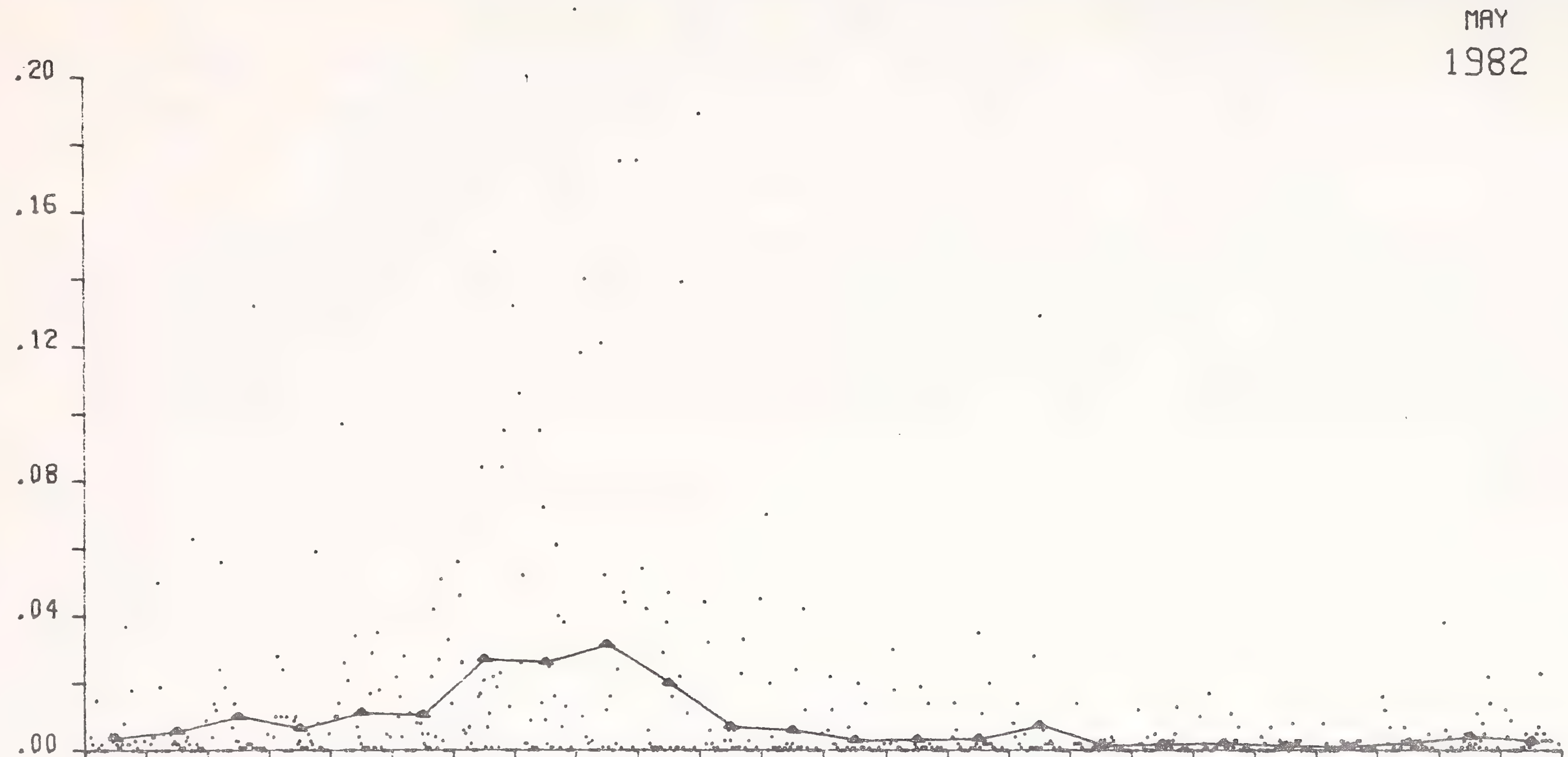
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 8

MAY
1982



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	31	31	30	30	30	31	31	31	30	30	30	31	31	29	30	28	29	31	31	31	31	31	31	31
1-HIGH	.037	.063	.132	.059	.097	.051	.148	.220	.175	.189	.045	.070	.022	.030	.035	.129	.014	.013	.017	.008	.008	.016	.038	.023
2-HIGH	.018	.050	.056	.028	.035	.042	.132	.106	.175	.139	.044	.042	.020	.019	.020	.028	.004	.012	.011	.007	.003	.012	.022	.012
HR.AVG	.004	.006	.010	.007	.011	.011	.027	.026	.032	.020	.007	.006	.003	.003	.004	.008	.002	.002	.002	.002	.001	.002	.004	.003

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0080, YELLOWSTONE CO
SITE. . . . . . 064, NORTH JOHNSON LANE
CITY. . . . . . BILLINGS

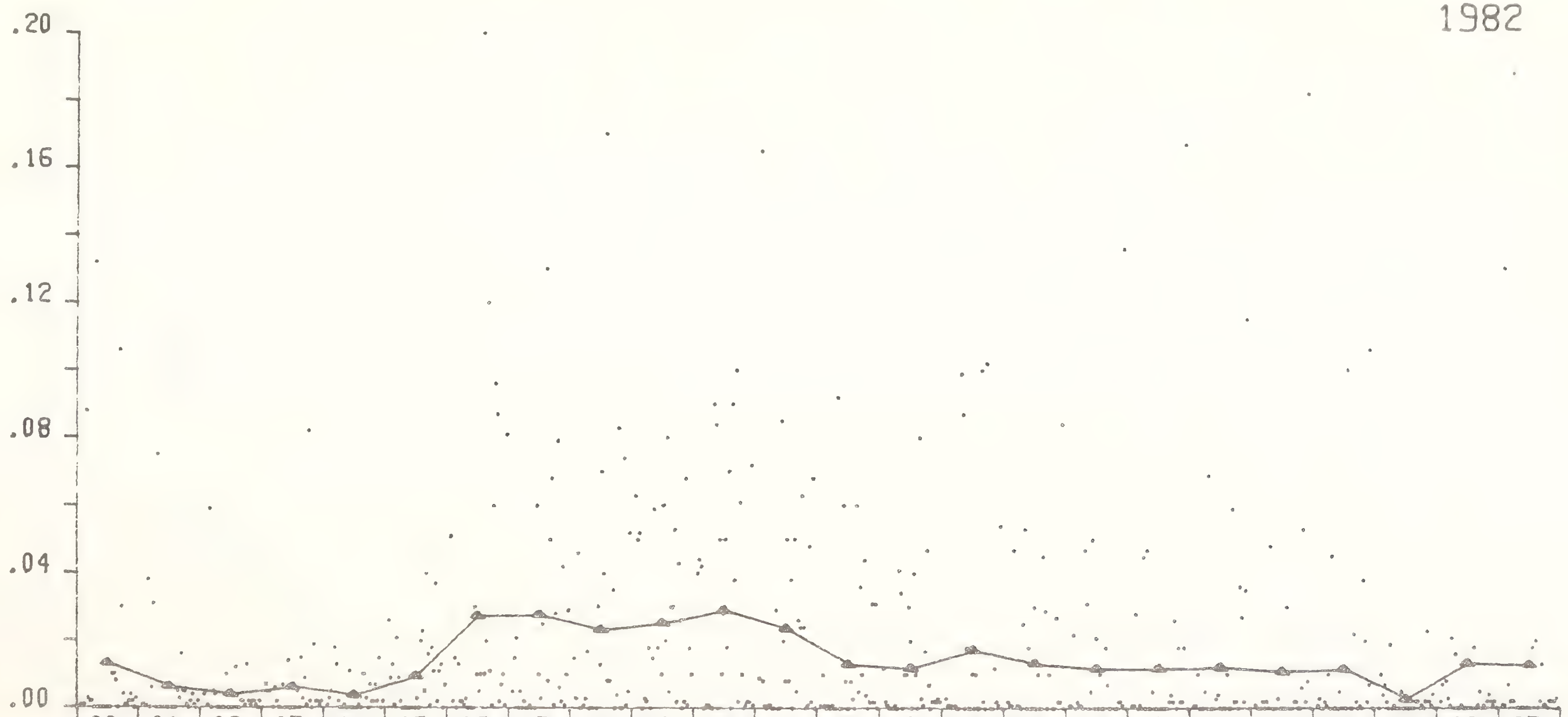
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 9

MAY
1982



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	31	31	31	30	30	31	31	30	29	30	31	31	31	31	29	29	30	31	31	31	31	31	31	31
1-HIGH	.132	.075	.059	.082	.018	.040	.200	.230	.170	.080	.100	.165	.092	.080	.102	.084	.136	.167	.115	.182	.106	.023	.322	.188
2-HIGH	.106	.038	.013	.019	.015	.037	.120	.130	.083	.068	.090	.085	.060	.047	.100	.053	.050	.047	.069	.053	.100	.019	.021	.130
HR.AVG	.013	.006	.004	.006	.004	.010	.027	.028	.023	.025	.029	.024	.013	.012	.017	.013	.012	.012	.012	.011	.012	.003	.013	.013

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0080, YELLOWSTONE CO
SITE. . . . . . 065, LOCKWOOD PARK
CITY. . . . . . BILLINGS

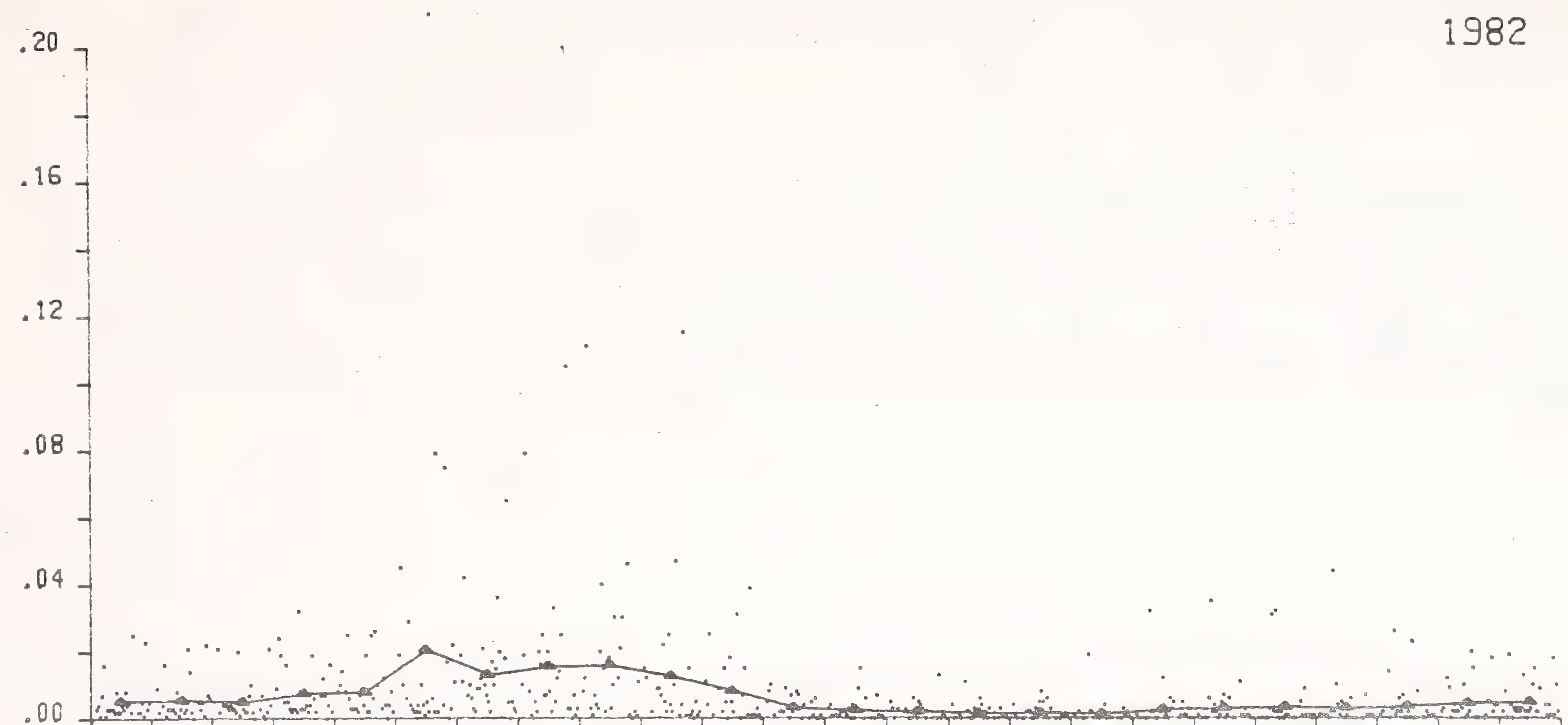
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 10

MAY
1982



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	28	27	27	28	28	28	28	28	27	25	26	25	25	24	26	26	27	28	28	28	28	27	28	29
1-HIGH	.025	.022	.021	.032	.026	.210	.065	.105	.111	.115	.039	.010	.015	.013	.011	.008	.019	.032	.035	.032	.044	.026	.020	.019
2-HIGH	.023	.021	.021	.024	.025	.079	.042	.079	.046	.047	.031	.009	.009	.006	.006	.006	.004	.012	.011	.031	.010	.023	.018	.018
HR.AVG	.005	.006	.005	.008	.008	.021	.013	.016	.016	.013	.008	.003	.003	.002	.002	.002	.002	.003	.003	.004	.003	.004	.005	.005

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0080, YELLOWSTONE CO
SITE. . . . . . 066, COBURN ROAD
CITY. . . . . . BILLINGS

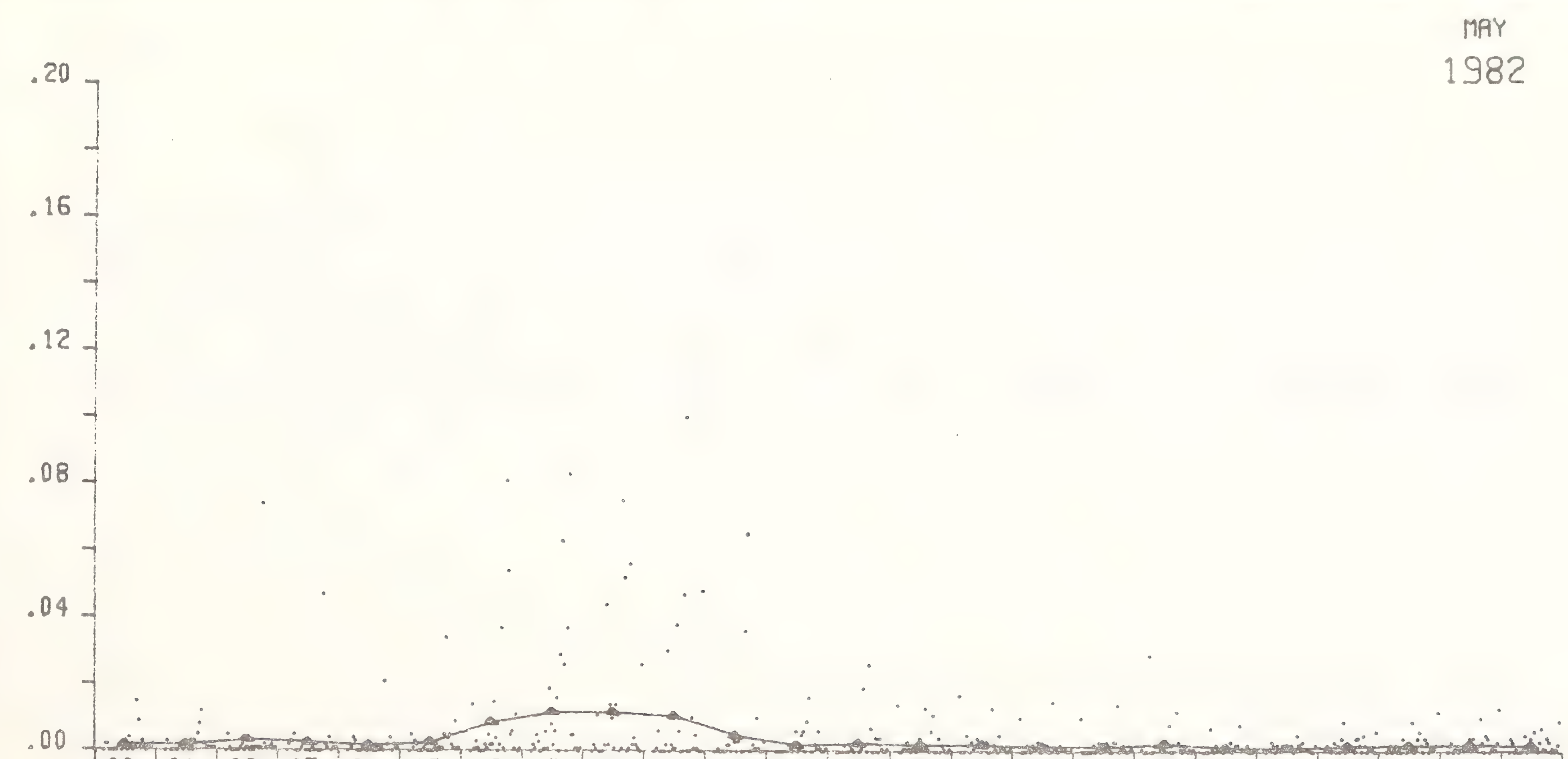
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 11

MAY
1982



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	28	28	28	28	28	28	28	27	28	28	28	28	28	29	29	28	29	28	29	29	29	29	29	29
1-HIGH	.015	.012	.074	.047	.021	.034	.081	.083	.075	.100	.065	.016	.026	.014	.017	.015	.014	.029	.008	.005	.009	.012	.013	.009
2-HIGH	.009	.008	.005	.005	.004	.009	.054	.063	.056	.048	.036	.009	.019	.013	.013	.010	.010	.012	.007	.003	.006	.009	.010	.007
HR.AVG	.002	.002	.004	.003	.002	.003	.009	.012	.012	.011	.005	.002	.003	.002	.002	.002	.002	.003	.001	.001	.002	.002	.002	.002

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0840, YELLOWSTONE CO
SITE. . . . . . 015, LAUREL BN
CITY. . . . . . LAUREL

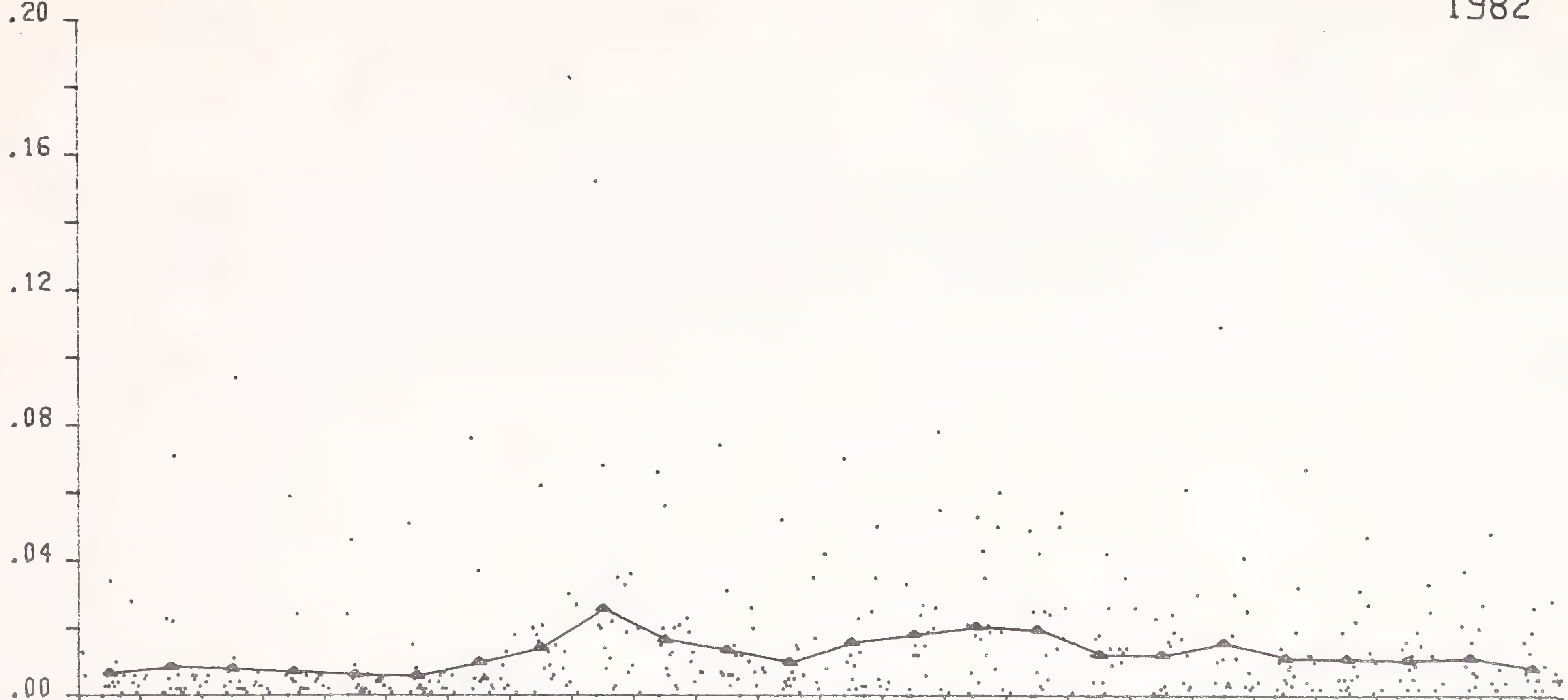
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 12

AUGUST
1982



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	20	20	20	20	20	20	20	19	19	20	20	19	20	20	19	18	19	20	20	20	20	20	20	20
1-HIGH	.034	.071	.094	.059	.046	.051	.076	.062	.152	.066	.074	.052	.070	.078	.060	.054	.042	.061	.109	.067	.047	.033	.048	.028
2-HIGH	.028	.023	.011	.024	.024	.015	.037	.030	.068	.056	.031	.035	.050	.055	.053	.050	.035	.026	.041	.032	.031	.025	.037	.026
HR.AVG	.007	.009	.008	.007	.006	.006	.010	.014	.026	.017	.013	.010	.016	.018	.021	.020	.012	.012	.016	.011	.011	.011	.011	.008

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0080, YELLOWSTONE CO
SITE. . . . . . 062, TAFT SCHOOL
CITY. . . . . . BILLINGS

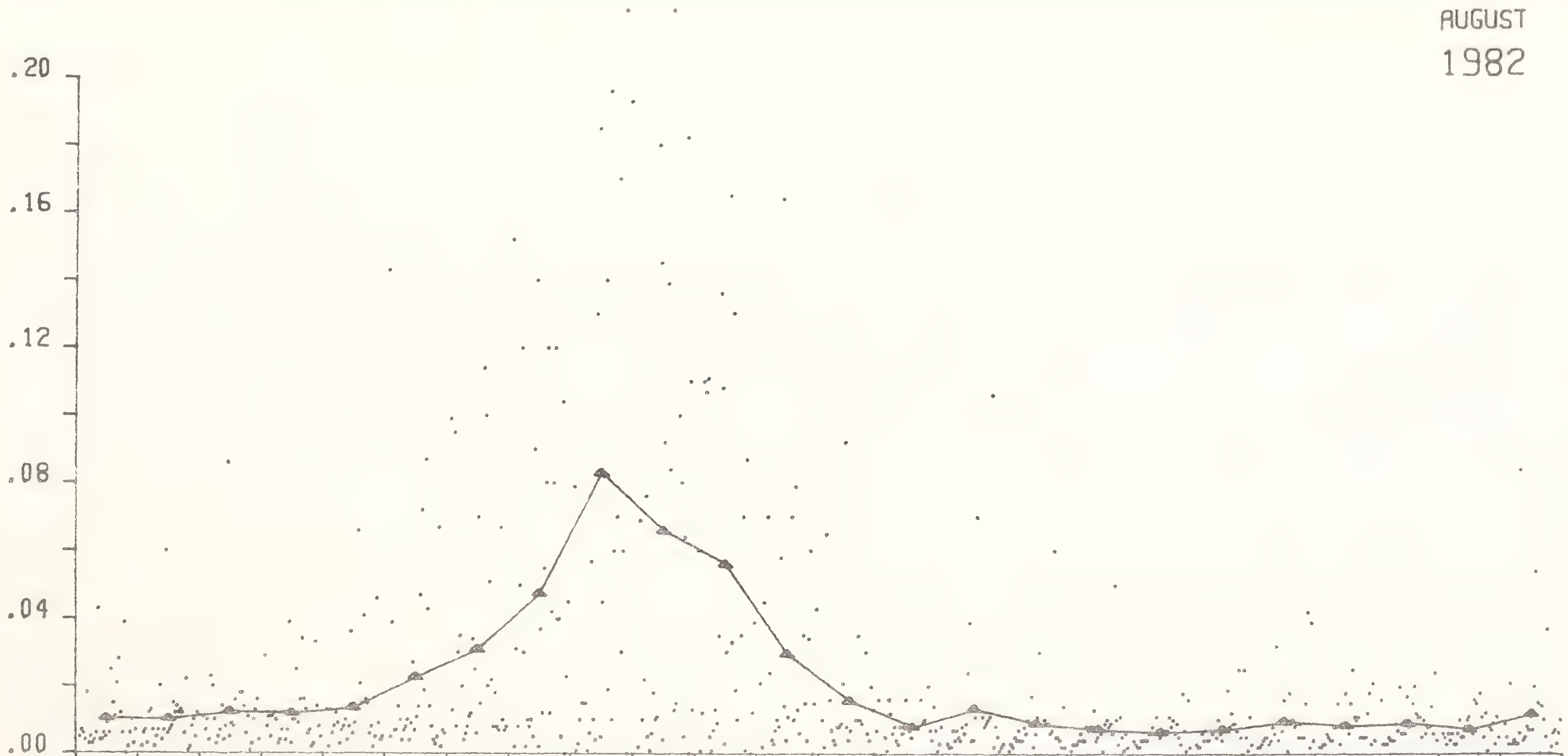
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 13

AUGUST
1982



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	31	31	31	31	31	31	31	31	29	29	29	28	27	26	29	29	31	31	31	31	31	31	31	31
1-HIGH	.043	.060	.086	.039	.066	.143	.114	.152	.425	.234	.277	.164	.092	.020	.106	.060	.050	.018	.025	.042	.025	.024	.018	.084
2-HIGH	.039	.022	.023	.034	.046	.087	.100	.140	.250	.220	.165	.079	.065	.016	.070	.030	.013	.016	.025	.039	.021	.020	.016	.054
HR.AVG	.010	.010	.013	.012	.014	.023	.031	.048	.083	.066	.056	.030	.016	.008	.013	.009	.007	.006	.007	.010	.009	.009	.007	.012

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

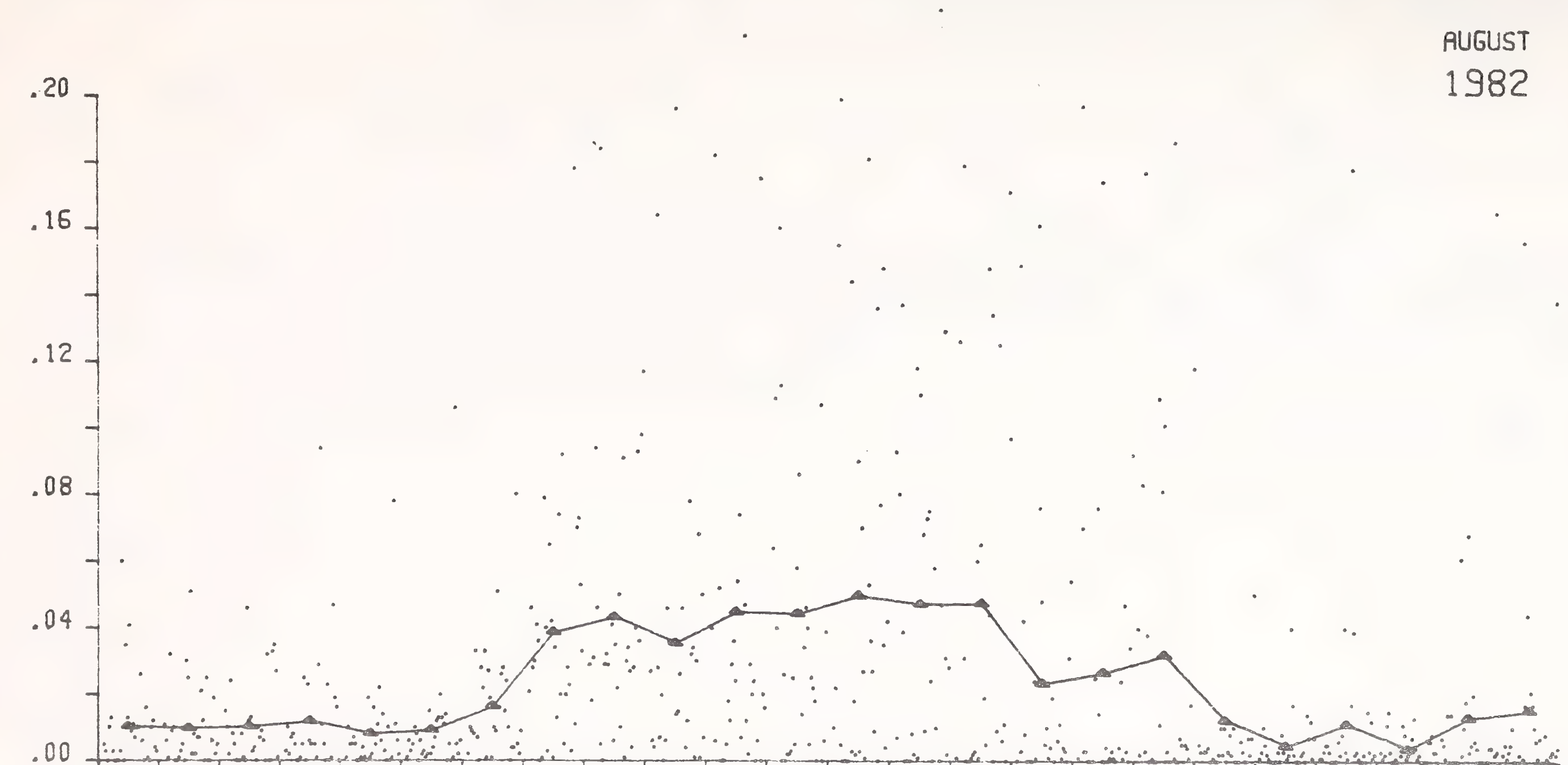
PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0080, YELLOWSTONE CO
SITE. . . . . . 064, NORTH JOHNSON LANE
CITY. . . . . . BILLINGS

MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 14



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	30	30	30	30	30	30	30	30	29	28	30	30	30	29	26	28	29	31	31	31	31	31	31	31
1-HIGH	.060	.051	.046	.094	.078	.106	.080	.178	.184	.196	.242	.239	.199	.226	.179	.161	.197	.186	.243	.040	.178	.015	.165	.156
2-HIGH	.041	.032	.035	.047	.022	.020	.051	.092	.117	.164	.218	.160	.181	.137	.171	.149	.174	.177	.050	.017	.040	.013	.068	.138
HR.AVG	.010	.010	.010	.012	.008	.009	.016	.039	.043	.035	.045	.044	.050	.047	.048	.024	.027	.032	.012	.005	.011	.004	.013	.016

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0080, YELLOWSTONE CO
SITE. . . . . . 065, LOCKWOOD PARK
CITY. . . . . . BILLINGS

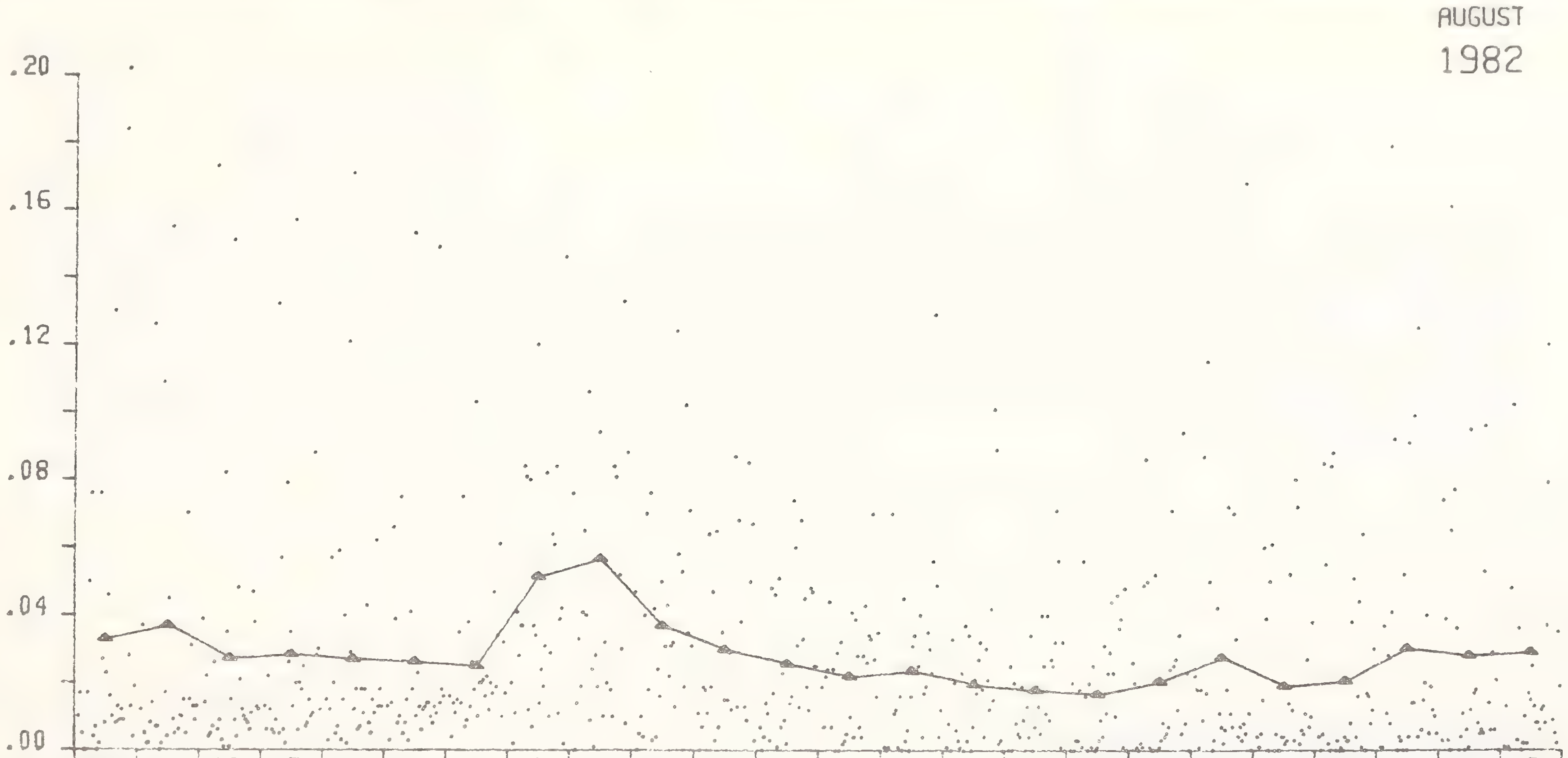
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 15

AUGUST
1982



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	31	31	31	31	31	31	31	31	29	29	27	30	31	30	31	31	31	31	31	31	31	31	31	31
1-HIGH	.202	.385	.173	.157	.171	.153	.103	.307	.270	.124	.087	.074	.070	.129	.101	.071	.056	.094	.168	.080	.088	.179	.161	.253
2-HIGH	.184	.155	.151	.132	.121	.149	.075	.146	.243	.102	.085	.068	.044	.070	.089	.056	.048	.086	.115	.072	.085	.125	.096	.120
HR.AVG	.033	.037	.027	.028	.027	.026	.025	.051	.057	.037	.030	.026	.022	.024	.020	.018	.017	.021	.027	.019	.021	.030	.028	.029

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0080, YELLOWSTONE CO
SITE. . . . . . 066, COBURN ROAD
CITY. . . . . . BILLINGS

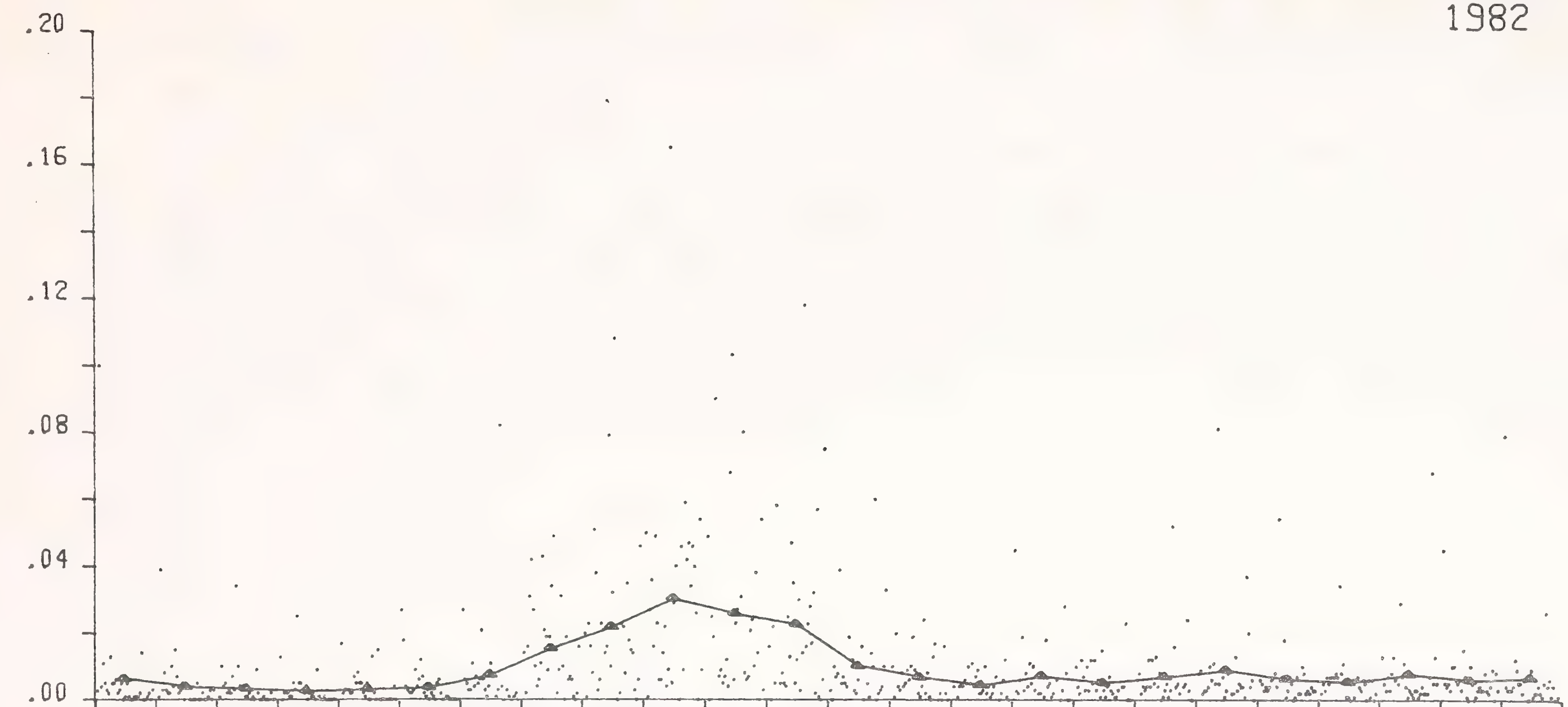
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 16

AUGUST
1982



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	31	31	31	31	31	31	30	30	30	30	29	30	30	30	29	28	30	30	31	31	31	31	31	31
1-HIGH	.100	.039	.034	.025	.017	.027	.082	.049	.108	.165	.103	.118	.060	.024	.012	.045	.023	.052	.081	.054	.034	.068	.045	.079
2-HIGH	.014	.015	.010	.013	.015	.018	.027	.043	.079	.059	.090	.075	.039	.020	.011	.028	.015	.024	.037	.018	.011	.029	.015	.026
HR.AVG	.006	.004	.004	.003	.003	.004	.008	.016	.022	.030	.026	.023	.010	.007	.005	.007	.005	.007	.009	.006	.006	.008	.006	.007

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0840, YELLOWSTONE CO
SITE. . . . . . 015, LAUREL BN
CITY. . . . . . LAUREL

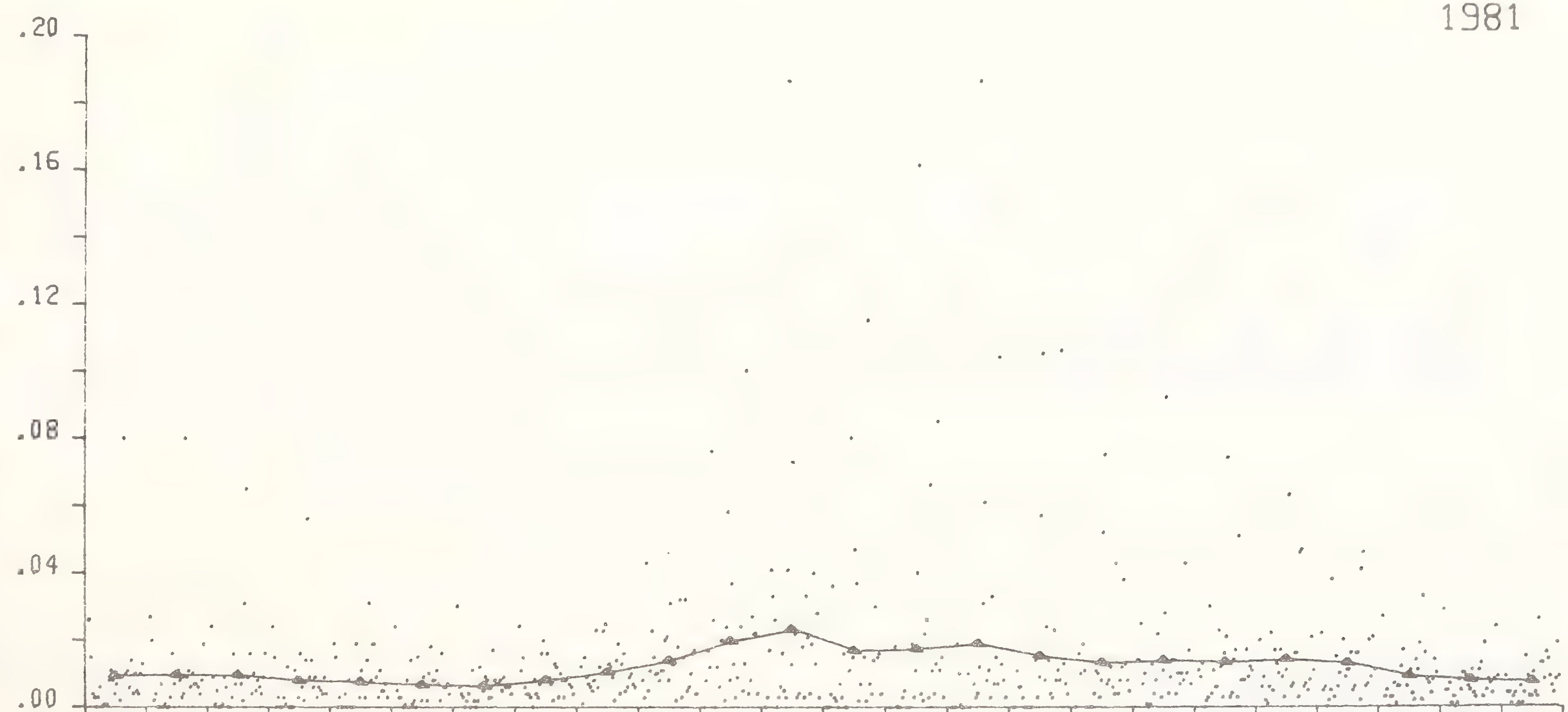
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 17

NOVEMBER
1981



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	30	30	30	30	30	30	30	30	30	30	29	29	29	30	29	29	29	30	30	30	30	30	30	30
1-HIGH	.080	.080	.065	.056	.031	.024	.030	.024	.025	.043	.100	.186	.115	.161	.186	.106	.075	.092	.074	.063	.046	.033	.029	.026
2-HIGH	.026	.027	.031	.024	.019	.018	.017	.020	.023	.032	.076	.073	.080	.085	.104	.105	.052	.043	.051	.047	.041	.027	.024	.019
HR.AVG	.009	.010	.010	.008	.008	.007	.006	.008	.011	.014	.020	.023	.017	.017	.019	.015	.013	.014	.014	.014	.013	.009	.008	.008

PLOT. . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0080, YELLOWSTONE CO
SITE. . . . . . 062, TAFT SCHOOL
CITY. . . . . . BILLINGS

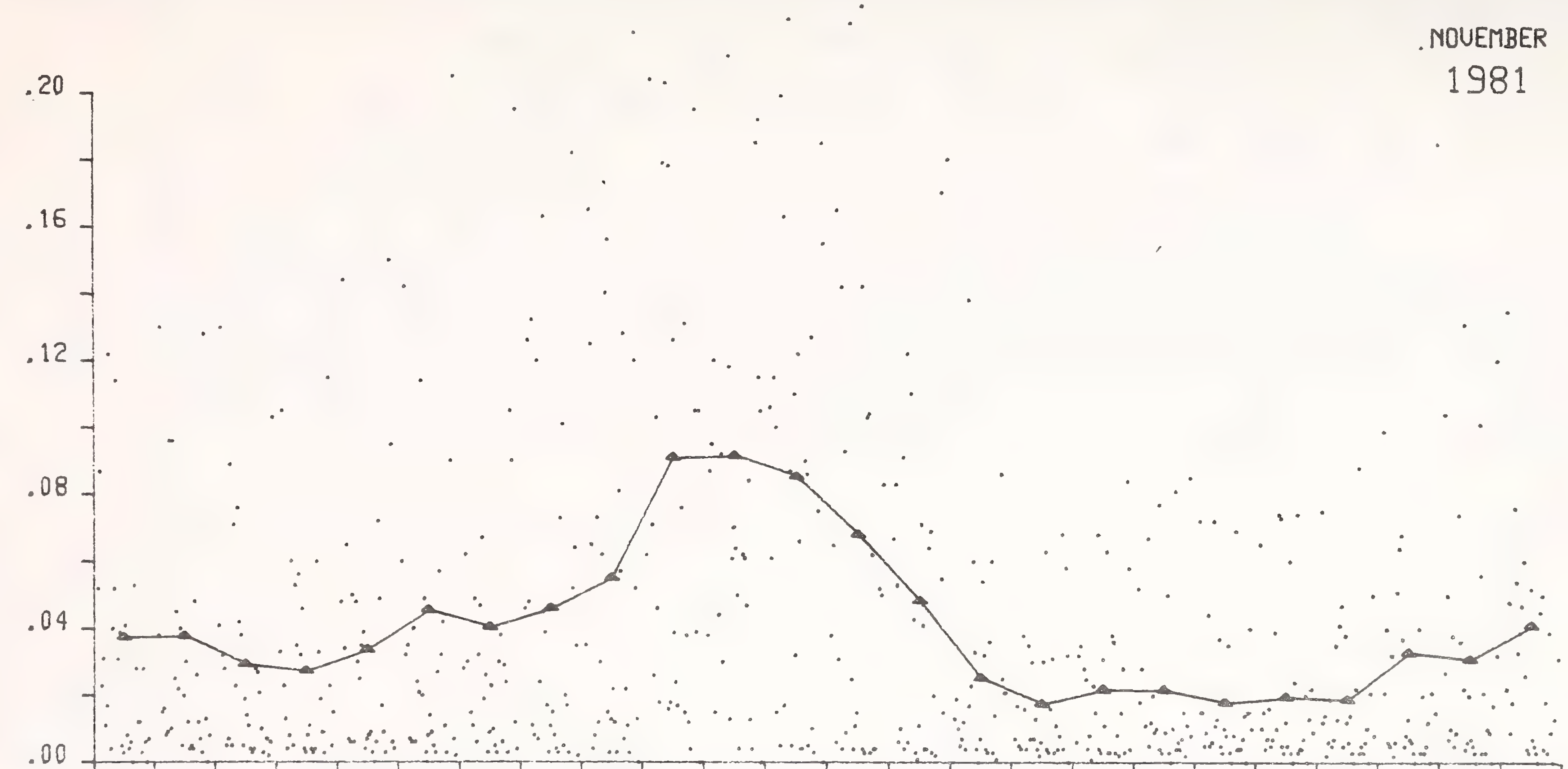
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 18

NOVEMBER
1981



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	30	30	29	29	29	30	30	30	30	29	29	29	28	27	28	30	29	29	30	30	30	30	30	30
1-HIGH	.290	.260	.130	.115	.150	.295	.235	.182	.218	.329	.417	.305	.238	.180	.138	.068	.084	.085	.072	.074	.088	.214	.131	.385
2-HIGH	.122	.130	.103	.105	.144	.205	.195	.163	.165	.260	.257	.222	.226	.170	.086	.063	.068	.081	.072	.074	.075	.185	.120	.135
HR.AVG	.038	.038	.029	.027	.034	.046	.041	.046	.055	.091	.092	.085	.068	.048	.025	.018	.022	.022	.018	.020	.019	.033	.031	.041

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0080, YELLOWSTONE CO
SITE. . . . . . 064, NORTH JOHNSON LANE
CITY. . . . . . BILLINGS

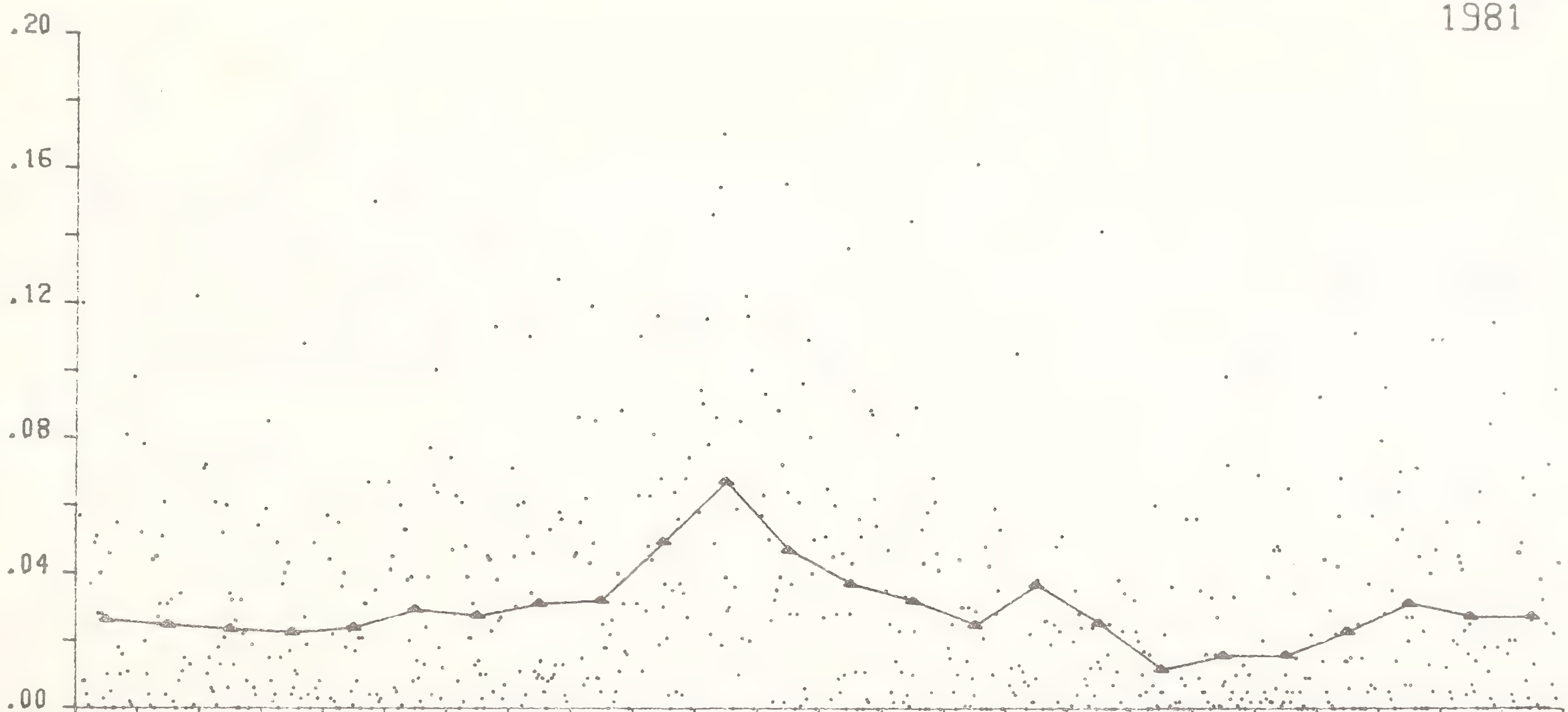
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 19

NOVEMBER
1981



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	30	29	29	29	30	30	30	30	30	29	26	28	29	29	29	29	29	29	30	30	30	30	30	30
1-HIGH	.120	.122	.072	.108	.150	.100	.113	.127	.119	.250	.170	.155	.136	.144	.161	.334	.245	.060	.098	.069	.111	.109	.114	.094
2-HIGH	.098	.078	.071	.085	.067	.077	.074	.110	.088	.116	.154	.109	.094	.089	.059	.266	.141	.056	.072	.065	.092	.095	.109	.093
HR.AVG	.026	.025	.024	.023	.024	.029	.027	.031	.032	.049	.067	.047	.037	.032	.025	.037	.025	.012	.016	.016	.023	.031	.027	.027

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0080, YELLOWSTONE CO
SITE. . . . . . 065, LOCKWOOD PARK
CITY. . . . . . BILLINGS

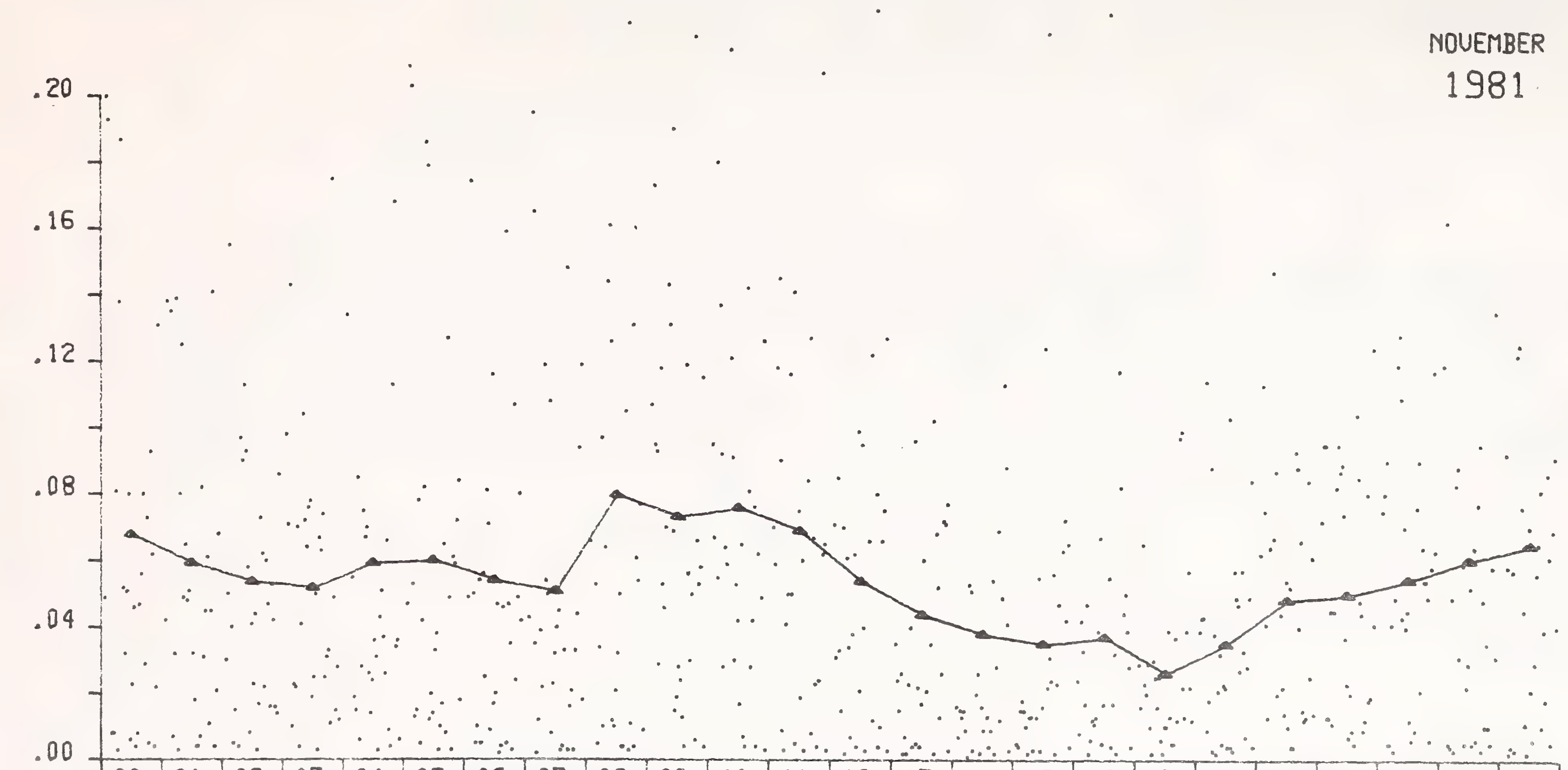
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 20

NOVEMBER
1981



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	30	30	30	30	30	30	30	30	30	30	30	29	29	29	29	28	29	30	30	30	30	30	30	30
1-HIGH	.265	.235	.235	.175	.255	.209	.230	.195	.305	.218	.245	.275	.226	.350	.365	.219	.225	.099	.114	.147	.124	.128	.283	.333
2-HIGH	.200	.141	.155	.143	.244	.203	.174	.165	.264	.190	.214	.207	.127	.102	.113	.124	.117	.097	.103	.113	.104	.119	.239	.265
HR.AVG	.068	.059	.054	.052	.059	.060	.054	.051	.080	.073	.076	.069	.054	.044	.038	.035	.037	.026	.035	.048	.050	.055	.060	.065

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0080, YELLOWSTONE CO
SITE. . . . . . . 066, COBURN ROAD
CITY. . . . . . BILLINGS

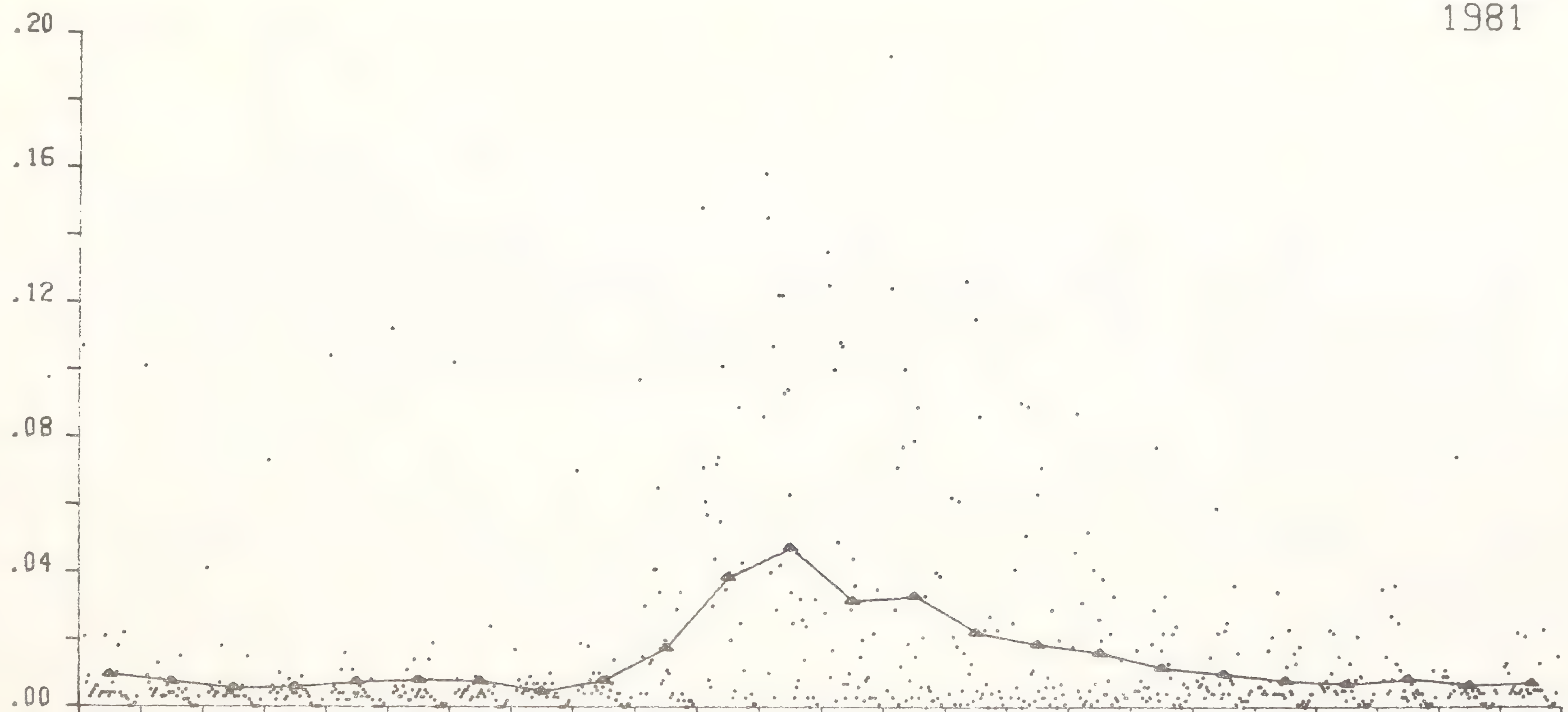
MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 21

NOVEMBER
1981



	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
NUM-OBS	30	30	30	30	30	30	30	30	29	28	27	28	30	30	29	30	30	30	30	30	30	30	30	30
1-HIGH	.107	.101	.041	.073	.104	.112	.102	.017	.070	.097	.148	.158	.135	.193	.126	.090	.087	.077	.059	.034	.023	.036	.074	.023
2-HIGH	.022	.015	.018	.010	.016	.019	.024	.010	.019	.065	.101	.145	.125	.124	.115	.089	.052	.033	.036	.023	.022	.035	.011	.022
HR.AVG	.010	.008	.005	.006	.008	.008	.008	.005	.008	.018	.039	.047	.032	.033	.022	.019	.016	.012	.010	.008	.007	.008	.007	.007

PLOT. . . . . . . CONCENTRATION VERSUS TIME (MON-SUN)
METHOD . . . . . PULSED FLUORESCENT
UNITS . . . . . . PARTS PER MILLION
STANDARDS . . . (STATE) .50 PPM 1-HR AVG

PARAMETER . . SULFUR DIOXIDE
AREA. . . . . . 0840, YELLOWSTONE CO
SITE. . . . . . 015, LAUREL BN
CITY. . . . . . LAUREL

MONTANA STATE AIR QUALITY BUREAU

APRIL 1983

TECHNICAL SERVICES

Figure 22

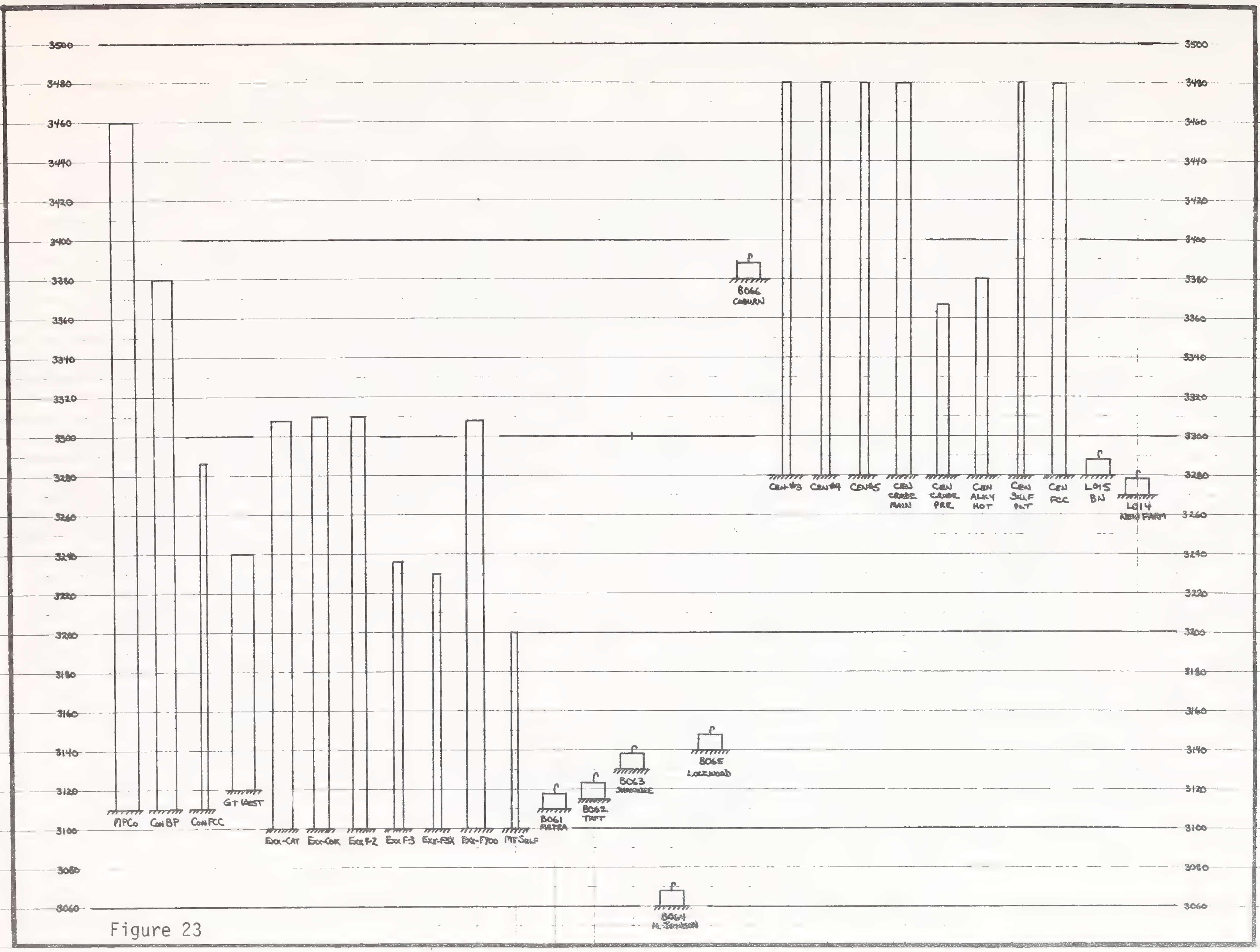

3500
3480
3460
3440
3420
3400
3380
3360
3340
3320
3300
3280
3260
3240
3220
3200
3180
3160
3140
3120
3100
3080
3060
MPCo
Con BP
Con FCC
GT West
Exx-CAT
Exx-COK
Exx F-2
Exx F-3
Exx-F3X
Exx-F700
MT SULF
B061 ASTRA
B062 TRPT
B063
B064 N. JOHNSON
B065 LOCKWOOD
B066 COBURN
CEN #3
CEN #4
CEN #5
CEN CRUDE MAIN
CEN CRUDE PRE
CEN ALKY HOT
CEN SULF PLT
CEN FCC
L015 BN
L014 NEW FARM

Figure 23

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                             DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES -- AIR QUALITY BUREAU
                                                MINIMASTER DATA REPORT      REPORT DATE: 03/27/84
                                                    FORM USED: MET DATA   BATCH NUMBER:                              PAGE:   1
FORM ST AREA SITE AG PRO TIME YR MO DA STHR  PARMS MT UN D RDG01 RDG02 RDG03 RDG04 RDG05 RDG06 RDG07 RDG08 RDG09 RDG10 RDG11 RDG12
   1 27 0080  062  F  01   1  82 01 01  00   61101 50 11 1 002.8 002.3 001.9 001.9 001.8 001.6 001.9 001.4 001.0 001.4 002.5 002.3
   1 27            F  01   1  82 01 01  12         50 11 1 001.9 001.5 001.1 001.8 001.3 001.0 001.1 001.0 001.0 001.1 001.3 001.0
   1 27            F  01   1  82 01 01  00   61102 50 14 0  0040  0046  0046  0068  0067  0050  0019  0045  0143  0204  0236  0217
   1 27            F  01   1  82 01 01  12         50 14 0  0230  0211  0124  0055  0035  0087  0203  0150  0174  0137  0052  0061
   1 27            F  01   1  82 01 01  00   62101 40 17 1 -19.5 -19.4 -19.3 -19.4 -19.1 -19.2 -19.2 -19.1 -18.5 -17.2 -15.9 -14.8
   1 27            F  01   1  82 01 01  12         40 17 1 -12.9 -11.2 -10.4 -11.1 -12.8 -14.9 -17.1 -17.7 -17.9 -17.7 -19.0 -20.7
   1 27            F  01   2  82 01 01  00   61501 11 59 0  0004  0004  0004  0004  0004  0004  0004  0004  0005  0006  0005  0004
   1 27            F  01   5  82 01 01  00   61401 11 57 0  0124  0157  0888  0114  0177

   1 27 0080  062  F  01   1  82 01 02  00   61101 50 11 1 001.0 001.0 001.0 001.0 001.0 001.0 001.0 001.0 001.0 001.0 001.0 001.8
   1 27            F  01   1  82 01 02  12         50 11 1 001.4 002.2 002.6 002.5 001.7 001.8 001.1 001.0 001.0 001.1 001.0 001.0
   1 27            F  01   1  82 01 02  00   61102 50 14 0  0125  0122  0092  0186  0045  0141  0071  0065  0066  0064  0048  0031
   1 27            F  01   1  82 01 02  12         50 14 0  0031  0027  0001  0034  0024  0013  0082  0070  0010  0222  0129  0178
   1 27            F  01   1  82 01 02  00   62101 40 17 1 -21.3 -21.4 -21.6 -22.1 -23.0 -23.5 -24.0 -24.6 -24.7 -23.7 -21.8 -20.6
   1 27            F  01   1  82 01 02  12         40 17 1 -19.8 -18.8 -18.3 -18.0 -17.9 -18.3 -19.1 -18.7 -18.9 -19.6 -20.5 -21.8
   1 27            F  01   2  82 01 02  00   61501 11 59 0  0006  0006  0006  0005  0004  0003  0004  0004  0004  0005  0006  0006
   1 27            F  01   5  82 01 02  00   61401 11 57 0  0177  0190  0275  0114  0079

   1 27 0080  062  F  01   1  82 01 03  00   61101 50 11 1 001.0 001.0 001.6 002.2 001.9 001.7 001.0 001.0 001.2 002.8 001.2 001.5
   1 27            F  01   1  82 01 03  12         50 11 1 001.6 001.3 001.5 001.2 001.5 001.3 002.4 003.9 001.9 002.1 003.3 003.5
   1 27            F  01   1  82 01 03  00   61102 50 14 0  0164  0189  0184  0213  0210  0217  0216  0331  0265  0218  0259  0185
   1 27            F  01   1  82 01 03  12         50 14 0  0177  0226  0069  0082  0237  0236  0242  0236  0211  0204  0238  0228
   1 27            F  01   1  82 01 03  00   62101 40 17 1 -22.4 -22.7 -21.5 -18.6 -17.5 -18.1 -18.6 -18.4 -16.4 -13.2 -12.7 -10.4
   1 27            F  01   1  82 01 03  12         40 17 1 -08.1 -06.4 -08.1 -10.1 -05.3 -03.7 -03.4 -03.9 -04.7 -05.1 -04.2 -05.0
   1 27            F  01   2  82 01 03  00   61501 11 59 0  0006  0005  0004  0004  0004  0004  0004  0004  0004  0004  0004  0004
   1 27            F  01   5  82 01 03  00   61401 11 57 0  0079  0160  0163  0118  0222
```

Figure 24

```
82 4 110.  4.  4.  5.  4.  4.  4.  4.  3.  3.  3.  4.  3.  3.  3.  3.  3.  4.  4.  4.  4.  5.  5.  5.  5.
82 4 110. 1.0 1.2 2.1 1.0 1.0 1.0 1.3 2.8 2.5 3.2 3.1 3.2 2.9 3.4 3.1 3.3 2.5 2.8 2.5 1.6 1.3 1.3 1.4 1.3
82 4 110.270.270.270.269.269.268.270.272.275.277.278.279.279.280.281.281.282.282.281.290.277.275.274.273.
82 4 110. 29. 43. 29. 21. 68. 63. 44. 60. 64.100.121.111.118.125. 86.130.121.101.111.107. 33.  0.  7. 19.
82 4 110. 29. 43. 29. 21. 68. 63. 44. 60. 64.100.121.111.118.125. 86.130.121.101.111.107. 33.  0.  7. 19.
82 4 110.248.221.195.168.141.115. 88.221.355.488.621.755.888.888.888.888.888.888.888.760.632.504.377.249.
82 4 110.248.221.195.168.141.115. 88.221.355.488.621.755.888.888.888.888.888.888.888.760.632.504.377.249.
82 4 111.  4.  4.  4.  4.  4.  4.  4.  4.  4.  4.  4.  3.  3.  2.  2.  2.  3.  3.  4.  4.  5.  4.  4.  4.
82 4 111. 1.5 1.6 1.7 2.0 1.5 2.1 2.3 3.2 4.2 4.4 4.3 4.4 3.9 3.5 2.5 2.5 2.4 1.5 1.0 1.0 1.0 1.0 1.2 1.6
82 4 111.273.272.271.272.271.271.273.276.280.282.285.286.287.288.289.290.290.290.290.285.282.282.280.278.
82 4 111. 31. 35. 13. 32.  9. 32. 68. 73. 67. 66. 62. 44. 51. 47.120. 97.111.122. 90.356. 23. 17.355.355.
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82 4 111.121.123.124.126.128.129.131.257.383.509.636.762.888.888.888.888.888.888.888.779.669.560.451.341.
82 4 112.  4.  4.  5.  5.  5.  4.  4.  4.  4.  4.  4.  3.  3.  3.  3.  3.  4.  4.  4.  5.  6.  5.  5.  5.
82 4 112. 1.6 1.8 1.9 1.5 1.0 1.0 1.3 2.4 2.0 1.3 4.0 3.9 3.8 3.6 2.8 3.2 2.9 2.4 1.6 1.4 1.0 1.0 1.0 1.0
82 4 112.277.276.275.275.274.274.276.281.284.288.292.293.294.294.295.296.296.296.295.290.288.273.272.281.
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82 4 112.  0.  3.  0.  7. 24. 44. 14. 36. 33.323. 63. 79. 82. 66. 62. 90. 81. 68. 20.339. 14. 25. 23. 35.
82 4 112.232.225.218.211.204.197.190.306.423.539.655.772.888.888.888.888.888.888.888.757.626.494.363.232.
82 4 112.232.225.218.211.204.197.190.306.423.539.655.772.888.888.888.888.888.888.888.757.626.494.363.232.
82 4 113.  4.  4.  5.  4.  4.  4.  4.  4.  4.  3.  3.  3.  4.  4.  4.  3.  3.  3.  4.  4.  4.  4.  5.  5.
82 4 113. 1.1 1.4 1.9 1.3 1.4 1.3 1.0 1.9 2.4 2.4 2.8 2.4 3.3 4.0 3.6 4.0 3.5 3.1 2.1 1.7 1.0 1.0 1.0 1.1
82 4 113.279.278.278.278.276.276.277.281.286.290.293.295.296.297.296.298.298.298.297.294.287.277.283.282.
82 4 113. 34.  0.  0. 10. 17. 30. 13.353. 24. 57. 49. 67. 55. 99.102.120.103.116.104.147.359. 34. 31. 10.
82 4 113. 34.  0.  0. 10. 17. 30. 13.353. 24. 57. 49. 67. 55. 99.102.120.103.116.104.147.359. 34. 31. 10.
82 4 113.101.111.121.130.140.150.160.281.403.524.645.767.888.770.651.533.414.296.177.165.153.141.129.117.
82 4 113.101.111.121.130.140.150.160.281.403.524.645.767.888.770.651.533.414.296.177.165.153.141.129.117.
82 4 114.  4.  4.  5.  5.  5.  4.  3.  3.  4.  3.  3.  2.  2.  3.  4.  4.  4.  4.  4.  4.  4.  4.  4.  4.
82 4 114. 1.0 1.1 1.0 1.2 1.0 1.1 1.3 1.3 1.4 3.2 2.8 2.0 2.2 3.4 6.3 7.0 6.9 5.6 5.8 5.5 4.8 4.9 6.0 5.8
82 4 114.280.280.279.278.277.277.279.281.286.291.292.293.293.294.293.292.290.290.288.287.286.284.282.280.
82 4 114. 48.  7.  9. 42. 25. 15. 54. 36.352.124.148.146.204.235.237.238.237.230.241.240.238.219.211.213.
82 4 114. 48.  7.  9. 42. 25. 15. 54. 36.352.124.148.146.204.235.237.238.237.230.241.240.238.219.211.213.
82 4 114.105.112.119.126.133.140.147.271.394.518.641.765.888.888.888.888.888.888.888.888.888.888.888.888.
82 4 114.105.112.119.126.133.140.147.271.394.518.641.765.888.888.888.888.888.888.888.888.888.888.888.888.
82 4 115.  4.  4.  4.  4.  4.  4.  4.  4.  4.  4.  4.  4.  4.  4.  4.  4.  4.  4.  4.  5.  6.  5.  6.  6.
82 4 115. 4.8 5.2 5.0 5.2 4.7 4.2 4.2 3.7 4.0 4.3 4.9 5.6 5.8 5.7 4.7 3.9 2.6 3.3 3.6 3.4 1.7 1.1 1.7 1.4
82 4 115.279.279.278.277.276.276.275.275.276.276.276.276.277.277.277.278.278.279.278.278.278.277.277.276.
82 4 115.214.226.237.243.245.244.244.246.232.223.233.237.238.238.244.246.267.240.248.248.279.200.241.242.
82 4 115.214.226.237.243.245.244.244.246.232.223.233.237.238.238.244.246.267.240.248.248.279.200.241.242.
82 4 115.888.770.652.534.416.298.180.298.416.534.652.770.888.888.888.888.888.888.888.763.638.512.387.262.
82 4 115.888.770.652.534.416.298.180.298.416.534.652.770.888.888.888.888.888.888.888.763.638.512.387.262.
82 4 116.  5.  5.  6.  5.  4.  4.  4.  4.  4.  4.  4.  4.  4.  3.  3.  3.  3.  3.  4.  4.  5.  5.  5.  5.
82 4 116. 3.3 3.0 4.2 3.0 3.1 3.4 3.5 2.6 1.9 2.9 2.8 2.0 1.6 1.9 1.2 1.6 1.7 1.9 3.0 2.9 4.2 4.6 3.2 1.0
82 4 116.276.275.274.274.273.273.273.273.276.279.280.281.282.283.284.285.286.286.286.284.283.282.281.280.
82 4 116.249.251.244.245.247.250.250.253.218.252.256.263.243.244.230.267.317.256.287.307.321.317.336. 37.
82 4 116.249.251.244.245.247.250.250.253.218.252.256.263.243.244.230.267.317.256.287.307.321.317.336. 37.
82 4 116.137.152.168.183.198.214.229.339.449.558.668.778.888.888.888.888.888.888.888.767.646.525.405.284.
82 4 116.137.152.168.183.198.214.229.339.449.558.668.778.888.888.888.888.888.888.888.767.646.525.405.284.
82 4 117.  6.  6.  6.  5.  5.  4.  4.  4.  4.  3.  3.  3.  3.  3.  3.  3.  4.  4.  4.  4.  5.  5.  6.  6.
82 4 117. 1.6 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.1 1.3 1.0 2.3 2.0 2.9 2.1 2.4 4.4 2.8 1.3 1.0 1.4 1.1 1.0 1.0
82 4 117.279.278.277.277.276.277.277.278.278.279.281.283.284.285.286.285.285.285.285.284.282.281.280.279.
82 4 117. 12.333. 75. 19. 18. 18. 53. 81.359. 29. 25.338.324.315.334. 54.244.240. 12. 18.  4.356.354. 28.
82 4 117. 12.333. 75. 19. 18. 18. 53. 81.359. 29. 25.338.324.315.334. 54.244.240. 12. 18.  4.356.354. 28.
82 4 117.163.157.151.145.140.134.128.255.381.508.635.761.888.888.888.888.888.888.888.760.631.503.375.246.
82 4 117.163.157.151.145.140.134.128.255.381.508.635.761.888.888.888.888.888.888.888.760.631.503.375.246.
82 4 118.  5.  5.  5.  5.  5.  4.  3.  2.  2.  2.  2.  2.  2.  3.  4.  4.  4.  4.  4.  4.  5.  4.  4.  4.
82 4 118. 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.3 1.8 1.2 1.2 2.2 1.8 2.9 2.6 3.0 1.4 1.3 1.1 1.0 2.1 4.6
82 4 118.277.277.276.275.275.274.276.279.283.285.288.292.293.296.297.296.296.295.294.292.291.290.284.282.
82 4 118. 30. 66. 59. 35. 66. 34. 39. 32.101.210.248.260.185.345. 47. 36. 53.103. 88. 12.357. 51. 22.105.
82 4 118. 30. 66. 59. 35. 66. 34. 39. 32.101.210.248.260.185.345. 47. 36. 53.103. 88. 12.357. 51. 22.105.
82 4 118.118.112.105. 99. 92. 86. 79.214.349.483.618.753.888.888.888.888.888.888.888.888.888.888.888.888.
82 4 118.118.112.105. 99. 92. 86. 79.214.349.483.618.753.888.888.888.888.888.888.888.888.888.888.888.888.
```

Figure 25

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                                   DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES --- AIR QUALITY BUREAU
                                         NATIONAL WEATHER SERVICE DATA    REPORT DATE: 12/29/83                          PAGE:109

 STATN    DATE    HR CEIL SKYC VISI WEATHER/ SEALVL DEW   WIND   STATN DRY/WET  REL ---------CLOUDS AND OBSCURING PHENOMENA-----------
  NO    YR MO DA     HGT  1234 BILE OBS-VISN PRESSR PT  DIR SPED PRESSR  BULB   HUM TOT A T HGT A T HGT  SUM  A T HGT  SUM  A T HGT TOT
                                                                          TEMP       SC  L L LOW 2 2 2ND  AT2  3 3 3RD  AT3  4 4 4TH OPQ

 24033 82 04 19 00 060 5500 200 00000000 024.3 020 26  12  26.49 031 027 064 8                                                   7
 24033 82 04    01 060 5500 200 00000000 024.4 019 24  10  26.49 029 026 066 7                                                   6
 24033 82 04    02 ---  2200 200 00000000 024.4 018 28  14  26.49 029 026 063 5  3 3 060 2 9 200  5   0 0 ---   5   0 0 ---  4
 24033 82 04    03 060 5500 200 00000000 024.4 018 30  14  26.49 029 026 063 7                                                   6
 24033 82 04    04 060 5500 200 00000000 025.0 017 30  14  26.51 029 025 061 7                                                   7
 24033 82 04    05 ---  2400 200 00000000 025.4 019 30  15  26.52 029 026 066 7  3 3 060 4 9 200  7   0 0 ---   7   0 0 ---  3
 24033 82 04    06 ---  2270 300 00000000 026.0 018 30  17  26.53 029 026 063 -                                                   4
 24033 82 04    07 ---  2270 300 00000000 027.3 018 30  16  26.55 029 026 063 -                                                   4
 24033 82 04    08 200 2250 300 00000000 027.5 018 32  16  26.56 033 028 054 8  2 3 050 2 7 090  4   4 9 200   8   0 0 ---  7
 24033 82 04    09 200 2250 400 00000000 027.6 018 31  15  26.57 037 030 046 6                                                   5
 24033 82 04    10 ---  2200 500 00000000 028.0 014 35  12  26.58 038 030 037 5                                                   5
 24033 82 04    11 050 8000 500 00000000 028.1 014 35  13  26.58 039 030 036 -  - 4 050                                          -
 24033 82 04    12 011 5800 150 00001000 028.1 017 33  20  26.58 037 030 044 -                                                   -
 24033 82 04    13 040 2800 300 00000000 028.2 016 32  15  26.58 038 030 041 -                                                   -
 24033 82 04    14 038 8000 400 00000000 028.0 007 35  19  26.58 041 030 024 -  - 4 038                                          -
 24033 82 04    15 038 8000 500 00000000 027.9 007 36  18  26.58 042 030 023 -                                                   -
 24033 82 04    16 040 8000 500 00000000 028.5 007 31  23  26.60 043 031 023 -                                                   -
 24033 82 04    17 050 5800 500 00000000 029.3 005 33  19  26.62 042 030 021 -  8 4 050 2 9 200  -   0 0 ---   -   0 0 ---  8
 24033 82 04    18 050 5800 500 00000000 030.3 007 35  17  26.64 040 029 025 -                                                   6
 24033 82 04    19 ---  2700 500 00000000 031.3 006 34  15  26.66 039 028 025 -                                                   2
 24033 82 04    20 ---  7000 200 00000000 032.3 013 32  11  26.69 035 028 040 -  0 3 050 - 9 200  -   0 0 ---   -   0 0 ---  1
 24033 82 04    21 ---  1000 200 00000000 033.1 013 32  12  26.71 033 026 044 4                                                   1
 24033 82 04    22 ---  1000 200 00000000 033.8 015 31  13  26.73 031 026 051 4                                                   1
 24033 82 04    23 ---  1000 200 00000000 034.0 014 30  12  26.73 029 025 053 2  2 8 200 0 0 ---  2   0 0 ---   2   0 0 ---  0
```
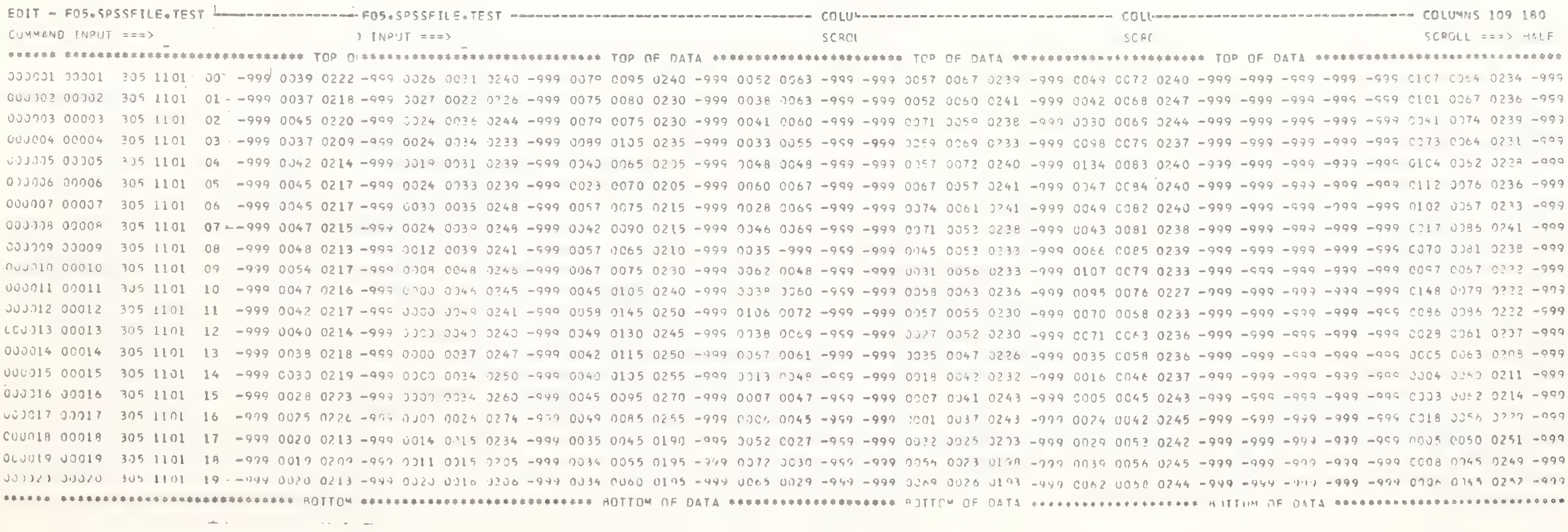

Figure 26

```
IYEAR=82 IMONTH= 7 DAY=30 JULIAN DAY= 211. SUNRISE=  4.989  SUNSET= 19.708
KST= 5    5    5    5    4    4    4    4    4    4    4    3    3    4    3    3    4    3    4    5    6    7    6    5
SPEED=    5.1  4.6  4.1  4.1  5.7  5.1  5.7  5.1  7.2  7.7  8.2  6.7  6.7  6.7  5.7  4.6  6.2  4.6  3.1  3.1  2.6  1.0  4.1  4.1
TEMP=293. 293. 292. 290. 290. 290. 290. 293. 296. 299. 301. 303. 304. 305. 306. 306. 306. 306. 305. 300. 300. 300. 298. 296.
AFV=  60.  50.  40.  50.  50.  40.  60.  20.  50.  40.  70.  40.  40.  40. 360.  70. 140. 130. 140. 140. 150. 150.  40.  60.
FVR=  56.  45.  36.  46.  45.  36.  55.  16.  46.  36.  65.  36.  36.  36. 356.  66. 136. 126. 136. 136. 146. 146.  36. ****
HLH1= 888.  838.  868.  888.    1.  100.  198.  297.  395.  494.  592.  691.
      789.  868.  888.  888.  888.  888.  888.  890.  896.  902.  908.  914.
HLH2= 137.  137.  137.  137.  138.  221.  305.  388.  471.  555.  638.  721.
      305.  883.  868.  888.  888.  888.  883.  839.  673.  506.  340.  173.
IYEAR=82 IMONTH= 7 DAY=31 JULIAN DAY= 212. SUNRISE=  5.008  SUNSET= 19.688
KST= 4    4    4    5    4    4    4    4    3    2    2    3    2    3    3    2    3    4    4    4    4    4    4    5
SPEED=    4.6  5.1  4.6  2.1 12.0  9.2  6.2  6.2  4.6  3.1  3.1  5.1  4.1  4.1  4.1  2.1  6.2  3.1  2.1  3.6  3.6  3.6  5.1  3.6
TEMP=296. 295. 294. 294. 295. 295. 295. 297. 299. 301. 301. 304. 305. 305. 306. 308. 304. 301. 295. 297. 297. 297. 298. 296.
AFV=  40.  30.  40.  60.  90. 120.  30.  30.  50.  10. 350. 360. 350.  60. 120. 140.  20. 350. 160. 310.  10. 210. 210. 230.
FVR=  26.  26.  36.  56.  96. 116.  26.  26.  46.   6. 346. 356. 346.  56. 116. 136.  16. 346. 156. 306.   6. 206. 206. ****
HLH1= 920.  926.  932.  938.  944.  951.  957.  963.  969.  975.  981.  987.
      993.  999.  999.  999.  999.  999.  999.  997.  991.  985.  979.  973.
HLH2= 920.  926.  932.  173.  944.  951.  957.  963.  969.  975.  981.  997.
      993.  993.  999.  999.  999.  999.  999.  997.  991.  985.  979.  119.
IYEAR=82 IMONTH= 8 DAY= 1 JULIAN DAY= 213. SUNRISE=  5.027  SUNSET= 19.668
KST= 6    5    6    5    5    4    4    4    3    2    2    2    2    2    3    4    4    4    4    4    4    4    4    4
SPEED=    1.5  5.1  3.1  3.1  5.7  7.7  7.7  5.1  2.6  1.5  2.1  3.6  4.1  3.1  5.1  8.2  2.1  5.7  3.6  4.6  4.1  3.6  4.1  5.1
TEMP=294. 294. 291. 290. 290. 290. 291. 293. 295. 299. 300. 303. 306. 308. 310. 310. 303. 303. 303. 303. 303. 303. 302. 301.
AFV= 120.  50.  50.  30.  30.  50.  20.  30.  70.  30. 300. 290. 220. 240. 310. 300. 300. 250. 290. 290. 360. 360.  40.  50.
FVR=116.  46.  46.  26.  26.  46.  16.  26.  66.  26. 296. 286. 216. 236. 306. 296. 296. 246. 286. 286. 356. 356.  36. ****
HLH1= 967.  961.  955.  949.  942.   96.  195.  294.  393.  492.  591.  690.
      789.  888.  888.  888.  888.  888.  888.  888.  888.  888.  888.  889.
HLH2= 118.  113.  113.  118.  118.  202.  287.  373.  459.  545.  631.  716.
      802.  888.  888.  888.  888.  888.  888.  888.  888.  888.  888.  888.
IYEAR=82 IMONTH= 8 DAY= 2 JULIAN DAY= 214. SUNRISE=  5.046  SUNSET= 19.647
KST= 4    4    4    4    4    4    4    4    3    2    2    2    2    2    2    2    3    3    4    5    6    6    7    6
SPEED=    8.2  7.2  5.7 10.3  5.7  4.1  4.1  4.1  4.1  3.1  2.6  4.1  3.6  2.1  2.1  2.6  4.1  3.6  4.1  3.1  2.6  3.1  1.5  3.1
TEMP=301. 301. 301. 296. 294. 294. 294. 294. 295. 297. 299. 300. 301. 301. 303. 303. 303. 303. 301. 298. 296. 296. 295. 294.
AFV=  60.  60.  60. 120. 110.  70. 120. 140. 160.  60. 150. 100. 140. 130.  80. 230. 250. 240. 220. 220. 190. 180. 180. 190.
FVR=  56.  56.  56. 116. 106.  66. 116. 136. 156.  56. 146.  96. 136. 126.  76. 226. 246. 236. 216. 216. 186. 176. 176. ****
HLH1= 888.  583.  888.  898.  888.  888.  898.  889.  858.  658.  888.  888.
      888.  888.  888.  889.  898.  888.  893.  893.  888.  888.  888.  888.
HLH2= 888.  668.  688.  888.  898.  888.  888.  868.  888.  888.  899.  888.
      888.  668.  863.  889.  898.  888.  898.  826.  551.  475.  300.  124.
IYEAR=82 IMONTH= 8 DAY= 3 JULIAN DAY= 215. SUNRISE=  5.065  SUNSET= 19.625
KST= 5    6    5    4    5    4    3    4    4    3    2    1    2    3    4    4    4    4    4    5    5    5    5    6
SPEED=    4.1  1.0  3.6  3.1  4.6  3.1  4.1  5.1 10.3  2.6  1.5  2.6  4.1  6.7 11.3  7.7  8.7  5.7  3.6  4.6  3.6  5.1  5.1  2.6
TEMP=293. 291. 289. 289. 288. 288. 289. 289. 291. 293. 298. 299. 304. 306. 305. 305. 305. 304. 302. 299. 295. 294. 293. 292.
AFV= 160. 160. 110.  40.  50.  40.  60.  40.  50. 130. 350.  20.  50.  20. 160. 180. 160. 180. 170. 180. 190. 210. 190. 260.
FVR=156. 156. 106.  36.  46.  36.  56.  36.  46. 126. 346.  16.  46.  16. 156. 176. 156. 176. 166. 176. 186. 206. 186. ****
HLH1= 888.  888.  866.  889.  888.   93.  192.  292.  391.  490.  590.  689.
      789.  888.  888.  838.  888.  388.  888.  888.  888.  888.  898.  898.
HLH2= 124.  124.  124.  124.  124.  204.  289.  375.  460.  546.  631.  717.
      302.  333.  889.  889.  888.  888.  898.  821.  642.  463.  284.  105.
IYEAR=82 IMONTH= 8 DAY= 4 JULIAN DAY= 216. SUNRISE=  5.084  SUNSET= 19.603
KST= 5    6    5    5    5    4    3    3    2    2    2    2    1    2    2    3    4    4    4    5    5    6    5    5
SPEED=    2.6  2.1  4.1  4.1  3.6  3.1  2.1  2.1  2.6  2.1  2.6  3.1  2.1  3.6  3.1  4.1  4.6  5.7  4.1  3.6  4.1  3.1  4.1  5.1
TEMP=291. 291. 289. 289. 289. 289. 290. 290. 293. 294. 297. 299. 300. 303. 304. 305. 305. 305. 304. 301. 300. 299. 297. 296.
AFV= 240. 240. 170. 170. 170. 150. 180. 340. 360.  20.  30. 350. 180. 240. 230. 240. 160. 220. 210. 230. 170. 190. 130. 120.
FVR=236. 236. 166. 166. 166. 146. 176. 336. 356.  16.  26. 346. 176. 236. 226. 236. 156. 216. 206. 226. 166. 186. 126. ****
HLH1= 388.  889.  888.  888.  898.   91.  191.  290.  390.  490.  539.  639.
      798.  888.  889.  888.  888.  888.  899.  883.  899.  888.  888.  888.
HLH2= 105.  105.  105.  105.  105.  185.  273.  361.  449.  537.  625.  712.
      800.  888.  888.  883.  888.  888.  888.  821.  654.  486.  318.  150.
```

Figure 27



```
EDIT - F05.SPSSFILE.TEST ----------------- F05.SPSSFILE.TEST ---------------------------------- COLU------------------------------- COLL------------------------------ COLUMNS 109 180
COMMAND INPUT ===>                          ) INPUT ===>                                          SCROL                                SCRC                                SCROLL ===> HALF
****** ****************************** TOP O******************************** TOP OF DATA ********************* TOP OF DATA ********************* TOP OF DATA ******************************
000001 00001  305 1101  00  -999 0039 0222 -999 0026 0031 0240 -999 0079 0095 0240 -999 0052 0063 -999 -999 0057 0067 0239 -999 0049 0072 0240 -999 -999 -999 -999 -999 0107 0064 0234 -999
000002 00002  305 1101  01 -999 0037 0218 -999 0027 0022 0226 -999 0075 0080 0230 -999 0038 0063 -999 -999 0052 0060 0241 -999 0042 0068 0247 -999 -999 -999 -999 -999 0101 0067 0236 -999
000003 00003  305 1101  02  -999 0045 0220 -999 0024 0036 0244 -999 0079 0075 0230 -999 0041 0060 -999 -999 0071 0059 0238 -999 0030 0069 0244 -999 -999 -999 -999 -999 0041 0074 0239 -999
000004 00004  305 1101  03  -999 0037 0209 -999 0024 0034 0233 -999 0089 0105 0235 -999 0033 0055 -999 -999 0059 0069 0233 -999 0098 0079 0237 -999 -999 -999 -999 -999 0073 0064 0231 -999
000005 00005  305 1101  04  -999 0042 0214 -999 0019 0031 0239 -999 0040 0065 0205 -999 0048 0048 -999 -999 0057 0072 0240 -999 0134 0083 0240 -999 -999 -999 -999 -999 0104 0052 0228 -999
000006 00006  305 1101  05  -999 0045 0217 -999 0024 0033 0239 -999 0023 0070 0205 -999 0060 0067 -999 -999 0067 0057 0241 -999 0047 0084 0240 -999 -999 -999 -999 -999 0112 0076 0236 -999
000007 00007  305 1101  06  -999 0045 0217 -999 0030 0035 0248 -999 0057 0075 0215 -999 0028 0065 -999 -999 0074 0061 0241 -999 0049 0082 0240 -999 -999 -999 -999 -999 0102 0057 0233 -999
000008 00008  305 1101  07 -999 0047 0215 -999 0024 0039 0248 -999 0042 0090 0215 -999 0046 0069 -999 -999 0071 0053 0238 -999 0043 0081 0238 -999 -999 -999 -999 -999 0017 0085 0241 -999
000009 00009  305 1101  08  -999 0048 0213 -999 0012 0039 0241 -999 0057 0065 0210 -999 0035 -999 -999 -999 0045 0053 0233 -999 0066 0085 0239 -999 -999 -999 -999 -999 0070 0081 0238 -999
000010 00010  305 1101  09  -999 0054 0217 -999 0009 0048 0246 -999 0067 0075 0230 -999 0062 0048 -999 -999 0031 0056 0233 -999 0107 0079 0233 -999 -999 -999 -999 -999 0097 0067 0222 -999
000011 00011  305 1101  10  -999 0047 0216 -999 0000 0046 0245 -999 0045 0105 0240 -999 0038 0060 -999 -999 0058 0063 0236 -999 0095 0076 0227 -999 -999 -999 -999 -999 0148 0079 0222 -999
000012 00012  305 1101  11  -999 0042 0217 -999 0000 0049 0241 -999 0058 0145 0250 -999 0106 0072 -999 -999 0057 0055 0230 -999 0070 0058 0233 -999 -999 -999 -999 -999 0096 0085 0222 -999
000013 00013  305 1101  12  -999 0040 0214 -999 0000 0040 0240 -999 0049 0130 0245 -999 0038 0069 -999 -999 0027 0052 0230 -999 0071 0063 0236 -999 -999 -999 -999 -999 0028 0061 0207 -999
000014 00014  305 1101  13  -999 0038 0218 -999 0000 0037 0247 -999 0042 0115 0250 -999 0057 0061 -999 -999 0035 0047 0226 -999 0035 0058 0236 -999 -999 -999 -999 -999 0005 0063 0208 -999
000015 00015  305 1101  14  -999 0030 0219 -999 0000 0034 0250 -999 0040 0105 0255 -999 0013 0048 -999 -999 0018 0042 0232 -999 0016 0046 0237 -999 -999 -999 -999 -999 0004 0040 0211 -999
000016 00016  305 1101  15  -999 0028 0223 -999 0000 0034 0260 -999 0045 0095 0270 -999 0007 0047 -999 -999 0007 0041 0243 -999 0005 0045 0243 -999 -999 -999 -999 -999 0003 0062 0214 -999
000017 00017  305 1101  16  -999 0025 0226 -999 0000 0026 0274 -999 0049 0085 0255 -999 0006 0045 -999 -999 0001 0037 0243 -999 0074 0042 0245 -999 -999 -999 -999 -999 0018 0056 0229 -999
000018 00018  305 1101  17  -999 0020 0213 -999 0014 0015 0234 -999 0035 0045 0190 -999 0052 0027 -999 -999 0032 0025 0203 -999 0029 0053 0242 -999 -999 -999 -999 -999 0005 0050 0251 -999
000019 00019  305 1101  18  -999 0019 0209 -999 0011 0015 0205 -999 0034 0055 0195 -999 0072 0030 -999 -999 0054 0023 0198 -999 0039 0056 0245 -999 -999 -999 -999 -999 0008 0045 0249 -999
000020 00020  305 1101  19 -999 0020 0213 -999 0020 0016 0206 -999 0034 0060 0195 -999 0065 0029 -999 -999 0069 0026 0193 -999 0062 0050 0244 -999 -999 -999 -999 -999 0006 0045 0247 -999
****** ****************************** BOTTOM ****************************** BOTTOM OF DATA ********************* BOTTOM OF DATA ********************* BOTTOM OF DATA ****************************
```

Figure 28

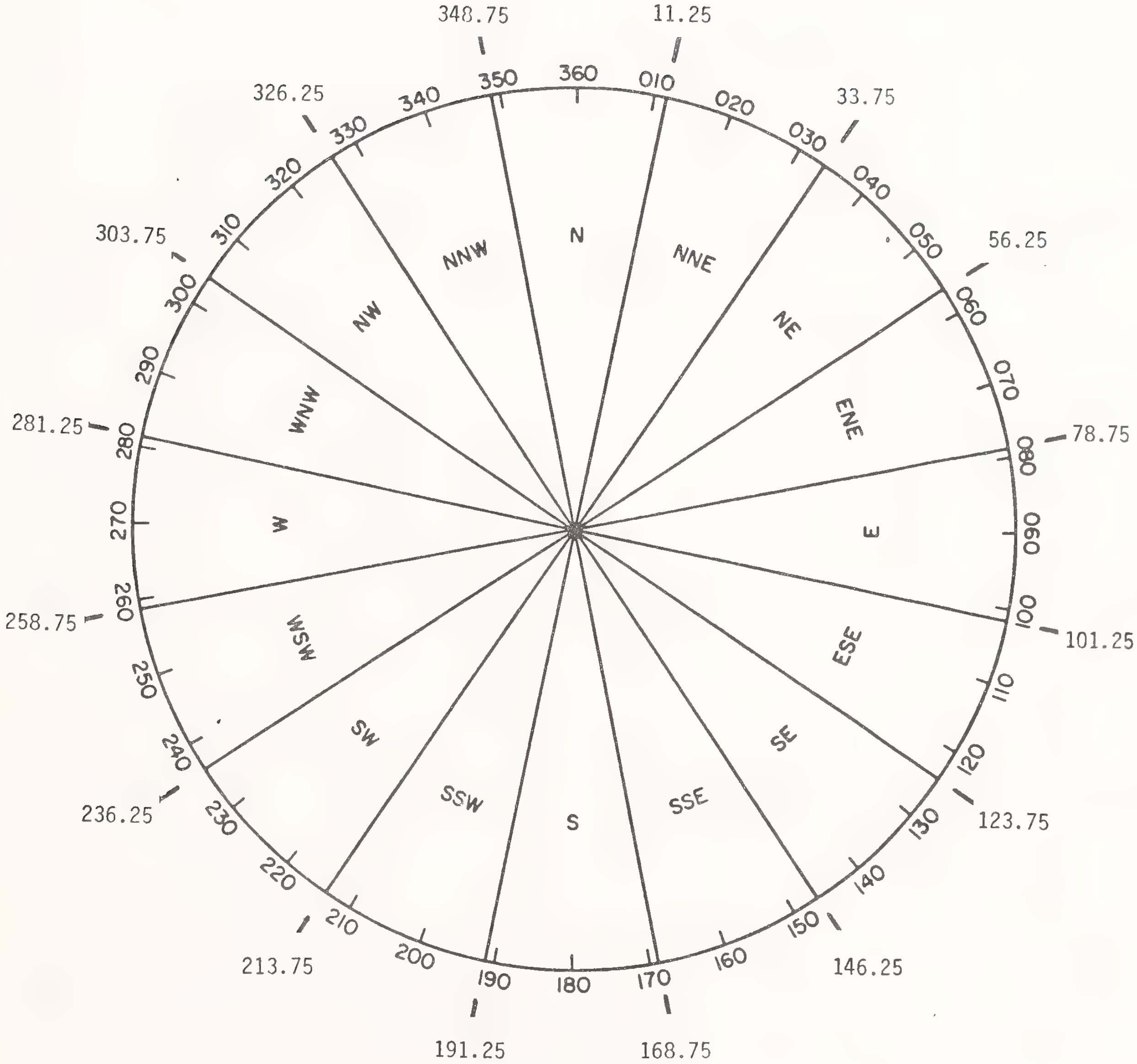

348.75
11.25
326.25
33.75
303.75
56.25
281.25
78.75
258.75
101.25
236.25
123.75
213.75
146.25
191.25
168.75
360
010
020
030
040
050
060
070
080
090
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW

Figure 29

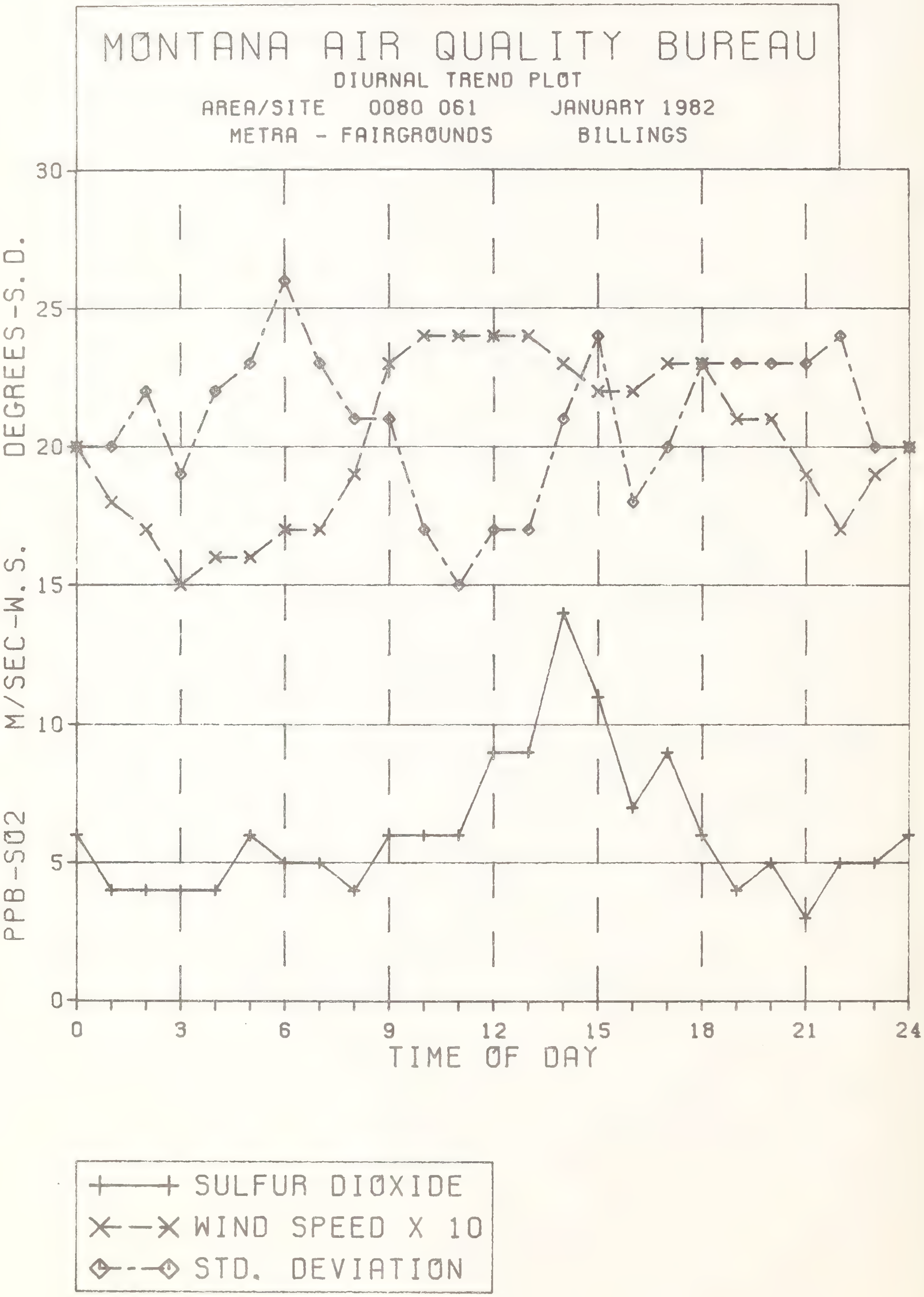

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 061 JANUARY 1982
METRA - FAIRGROUNDS BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
0
5
10
15
20
25
30
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 30

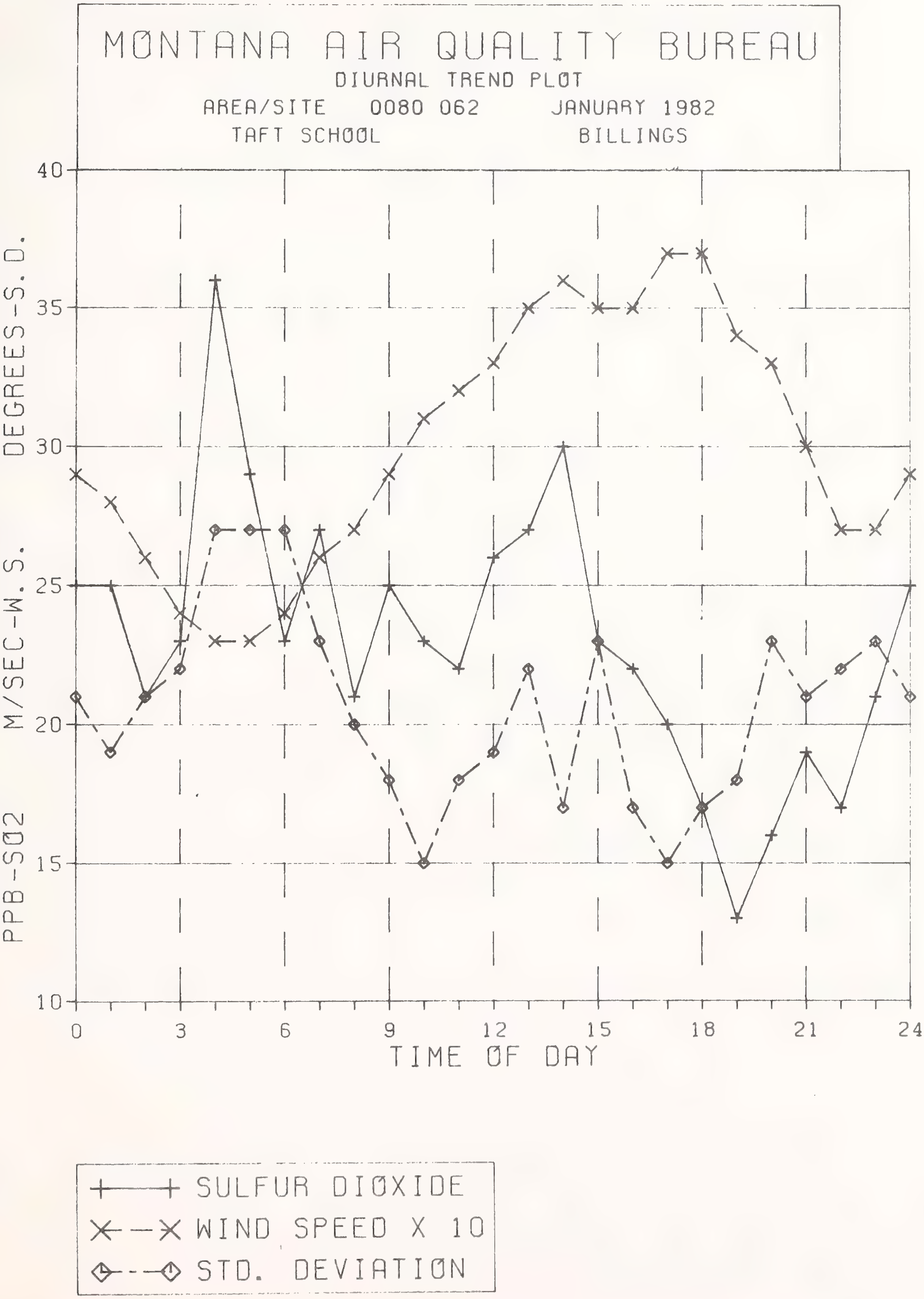

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 062 JANUARY 1982
TAFT SCHOOL BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
40
35
30
25
20
15
10
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 31

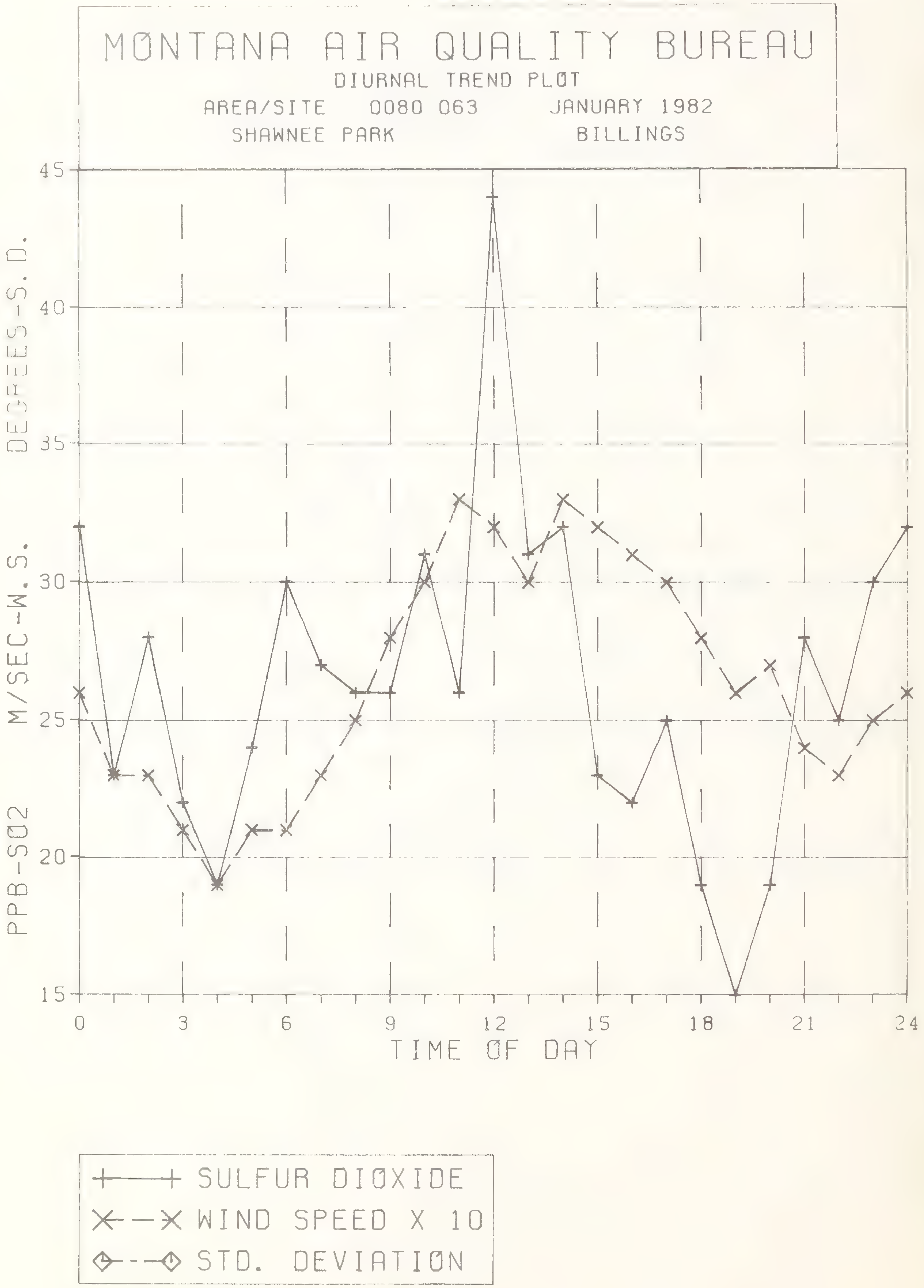

MØNTANA AIR QUALITY BUREAU
DIURNAL TREND PLØT
AREA/SITE 0080 063
JANUARY 1982
SHAWNEE PARK
BILLINGS
PPB-SØ2 M/SEC-W.S. DEGREES-S.D.
45
40
35
30
25
20
15
0
3
6
9
12
15
18
21
24
TIME ØF DAY
SULFUR DIØXIDE
WIND SPEED X 10
STD. DEVIATIØN

Figure 32

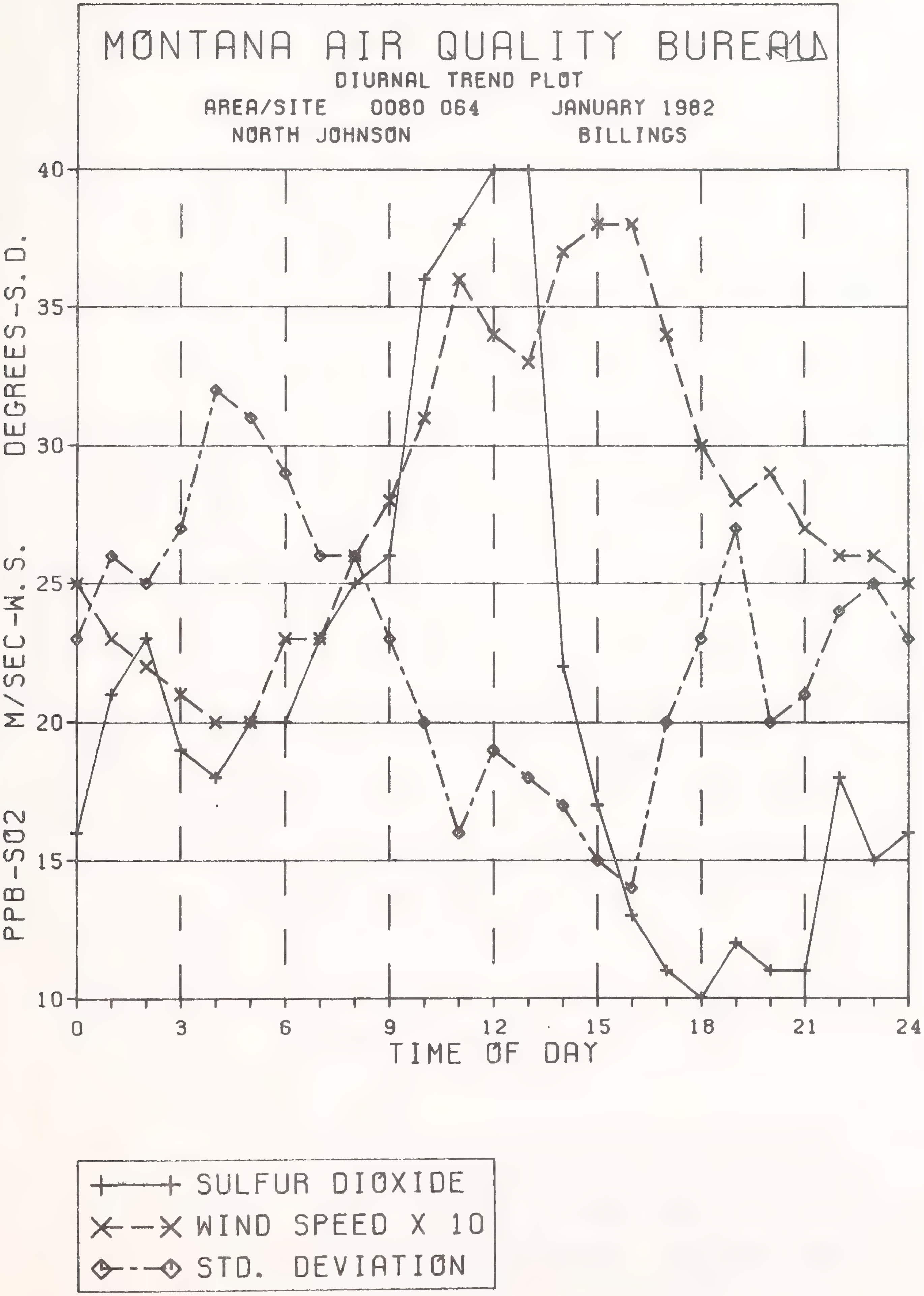

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 064 JANUARY 1982
NORTH JOHNSON BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
40
35
30
25
20
15
10
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 33

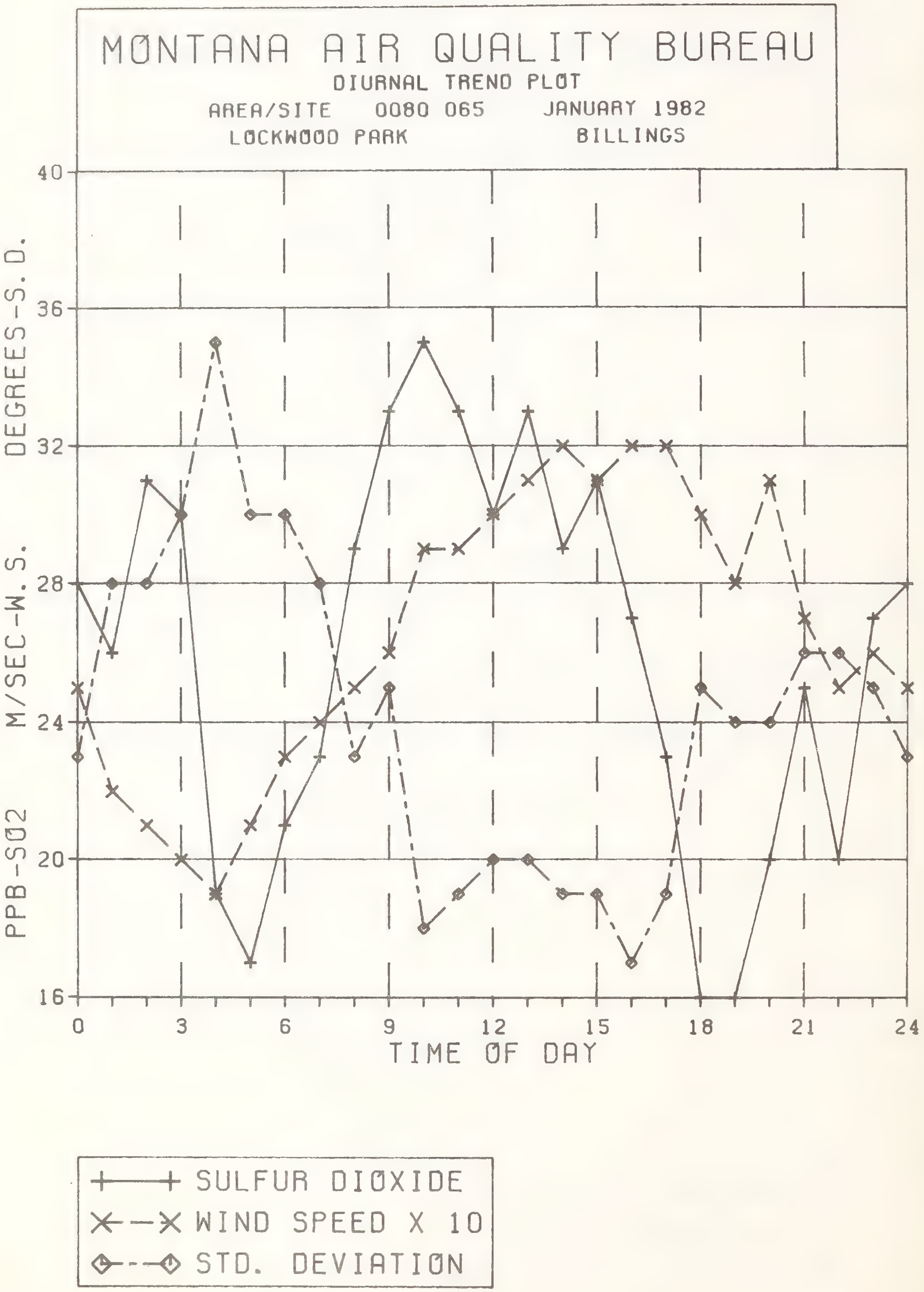

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 065 JANUARY 1982
LOCKWOOD PARK BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
40
36
32
28
24
20
16
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 34

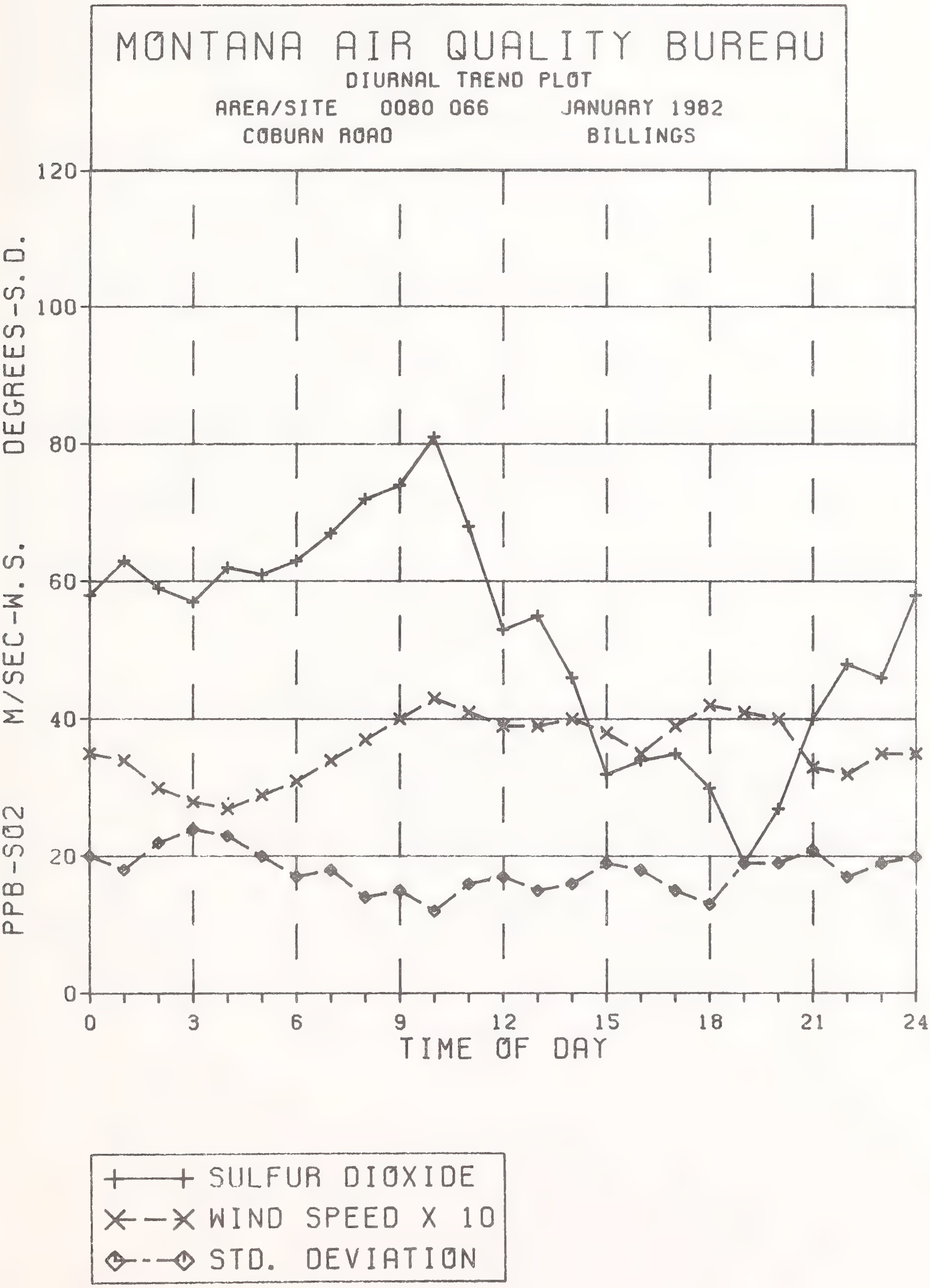

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 066 JANUARY 1982
COBURN ROAD BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
120
100
80
60
40
20
0
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 35

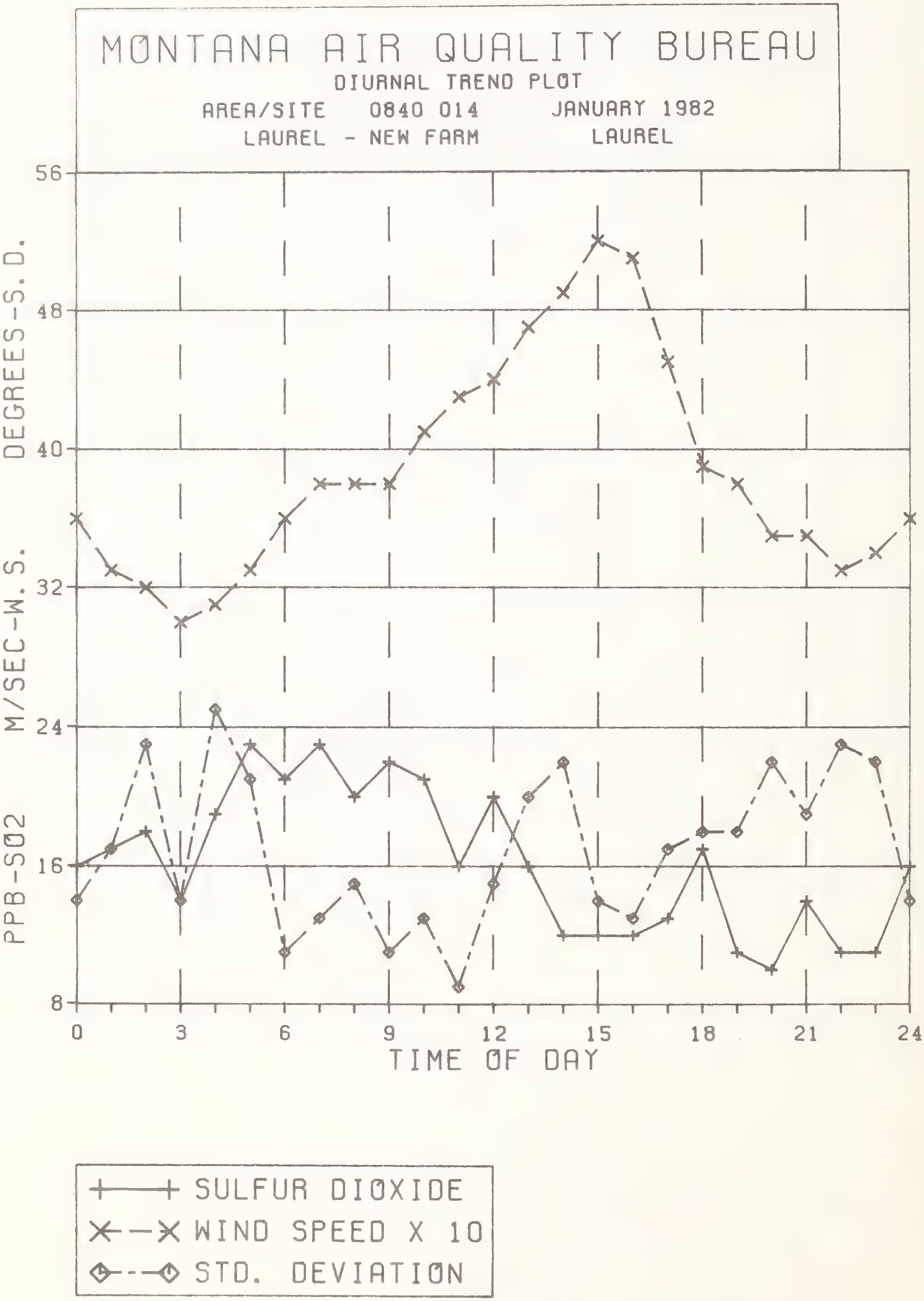

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0840 014 JANUARY 1982
LAUREL - NEW FARM LAUREL
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
56
48
40
32
24
16
8
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 36

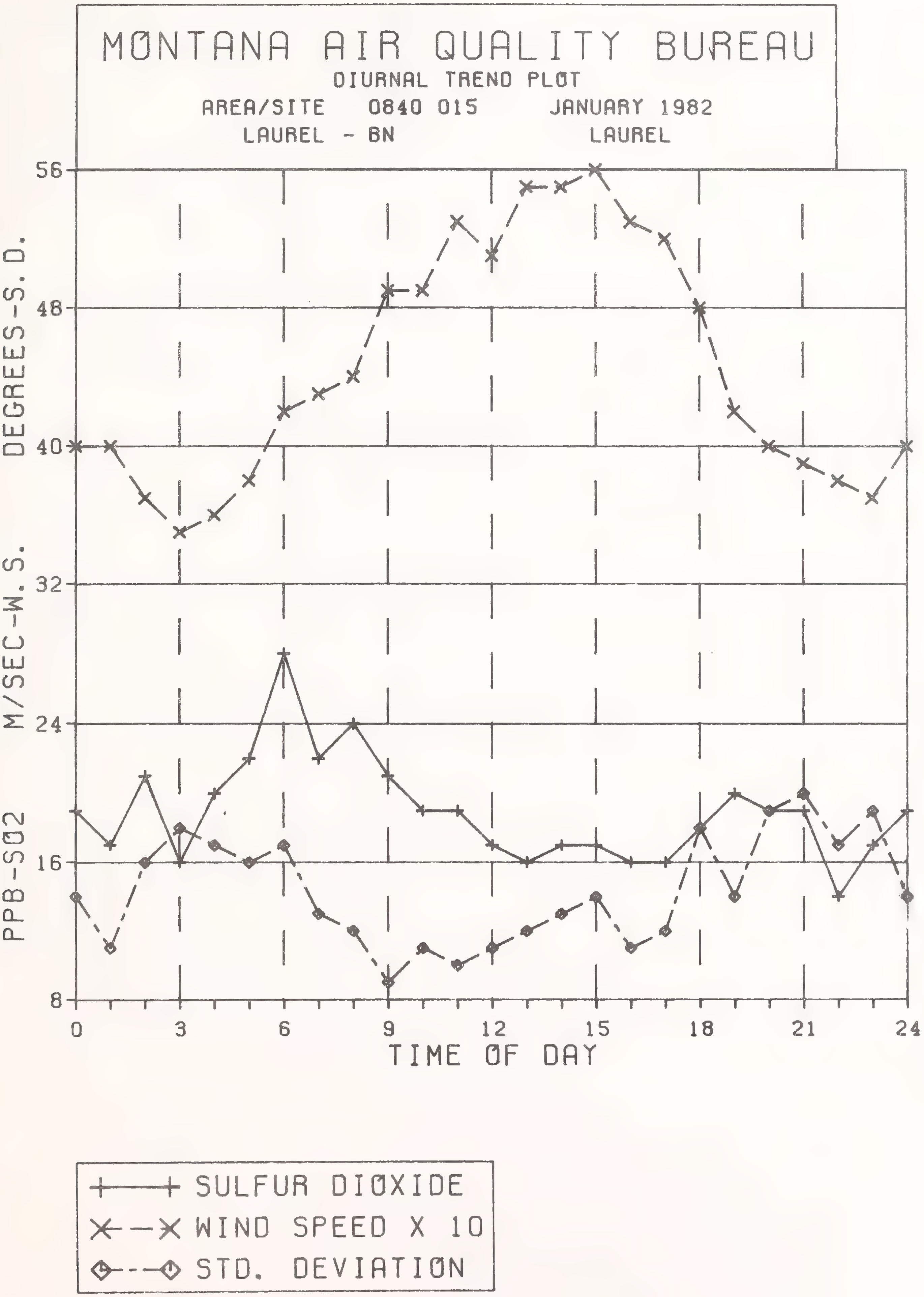

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0840 015 JANUARY 1982
LAUREL - BN LAUREL
DEGREES-S.D.
M/SEC-W.S.
PPB-SO2
56
48
40
32
24
16
8
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 37

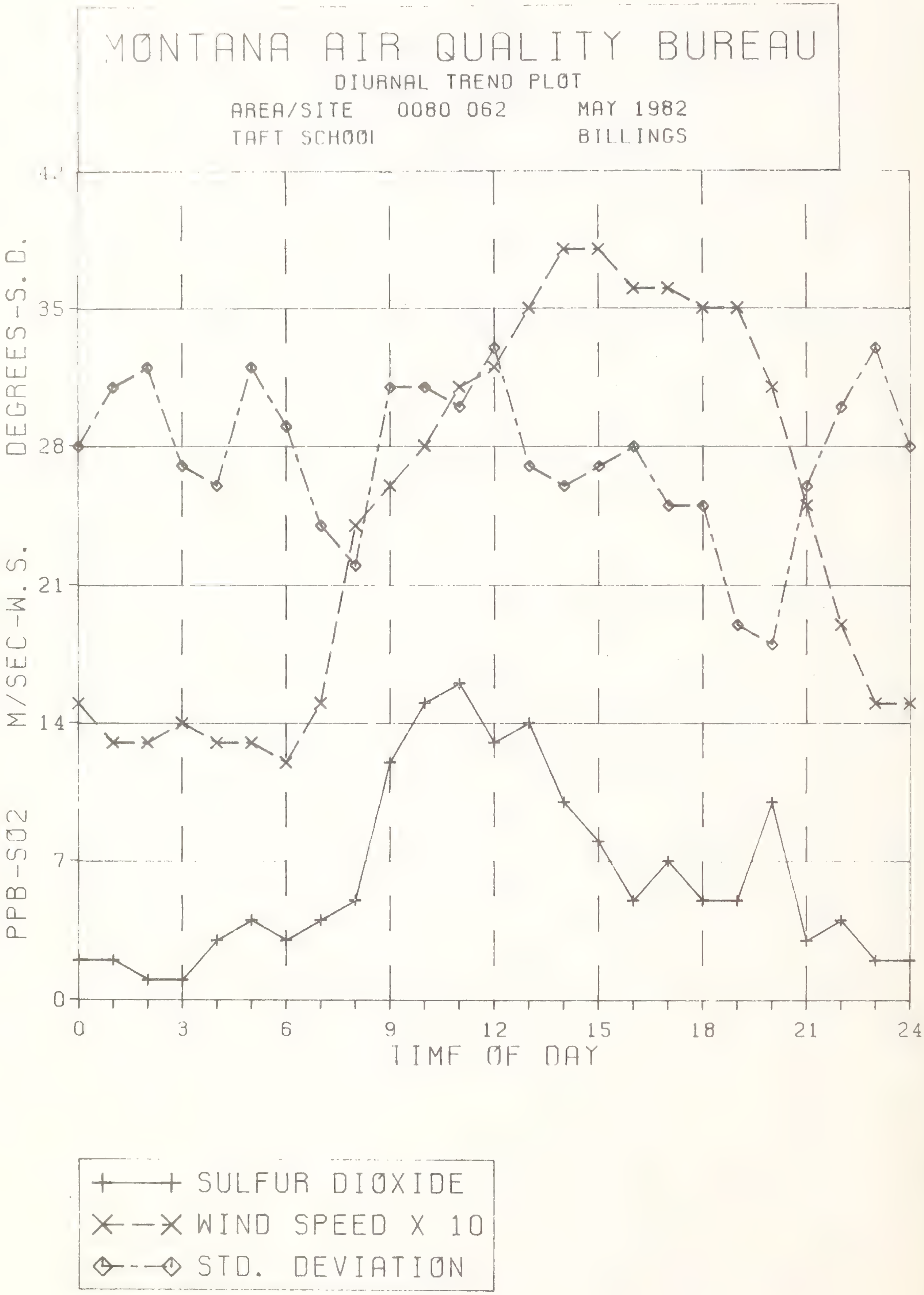

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 062
MAY 1982
TAFT SCHOOL
BILLINGS
DEGREES-S.D.
M/SEC-W.S.
PPB-SO2
35
28
21
14
7
0
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 38

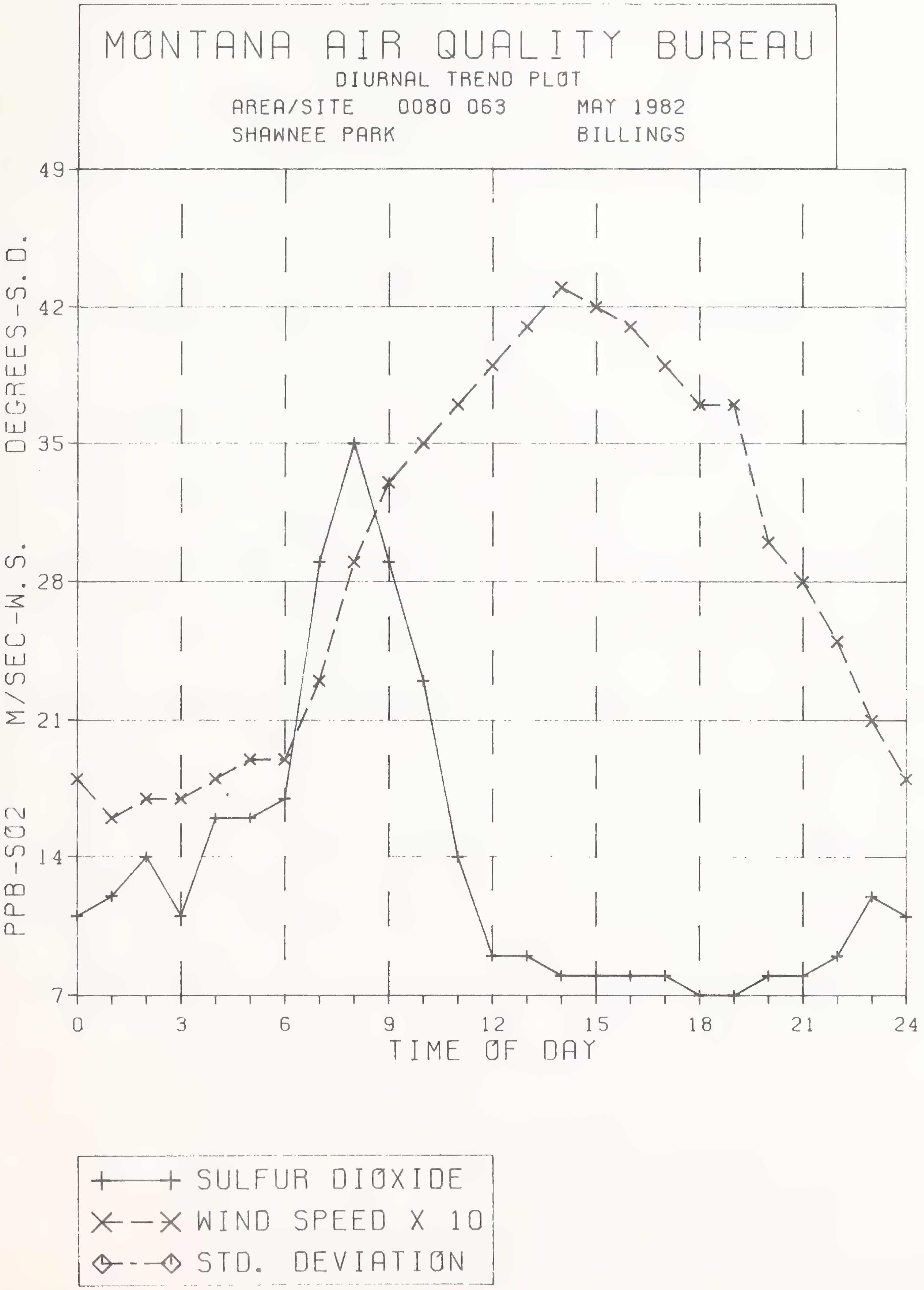

MØNTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 063 MAY 1982
SHAWNEE PARK BILLINGS
PPB-SØ2 M/SEC-W.S. DEGREES-S.D.
49
42
35
28
21
14
7
0
3
6
9
12
15
18
21
24
TIME ØF DAY
SULFUR DIØXIDE
WIND SPEED X 10
STD. DEVIATIØN

Figure 39

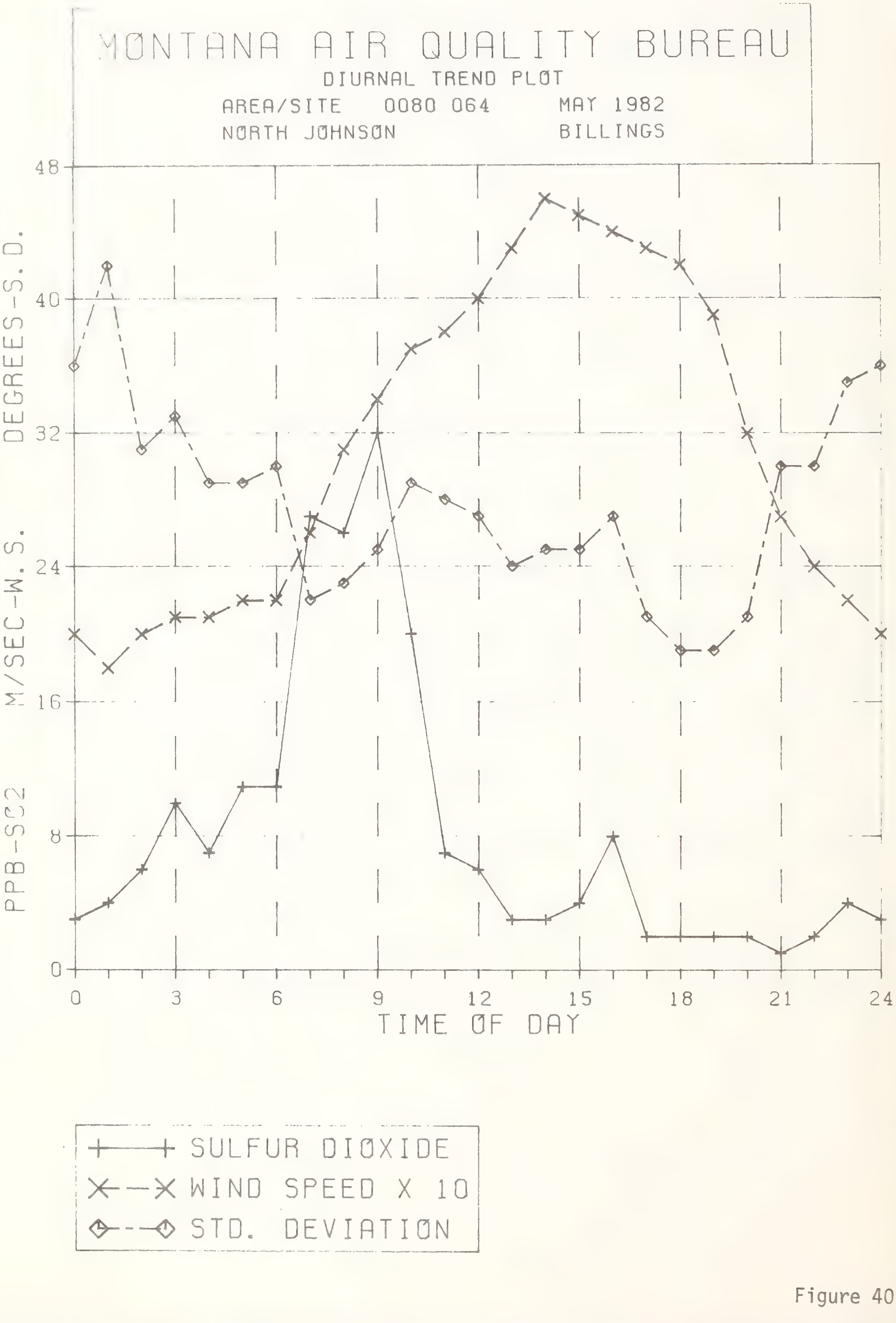

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 064 MAY 1982
NORTH JOHNSON BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
0
8
16
24
32
40
48
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 40

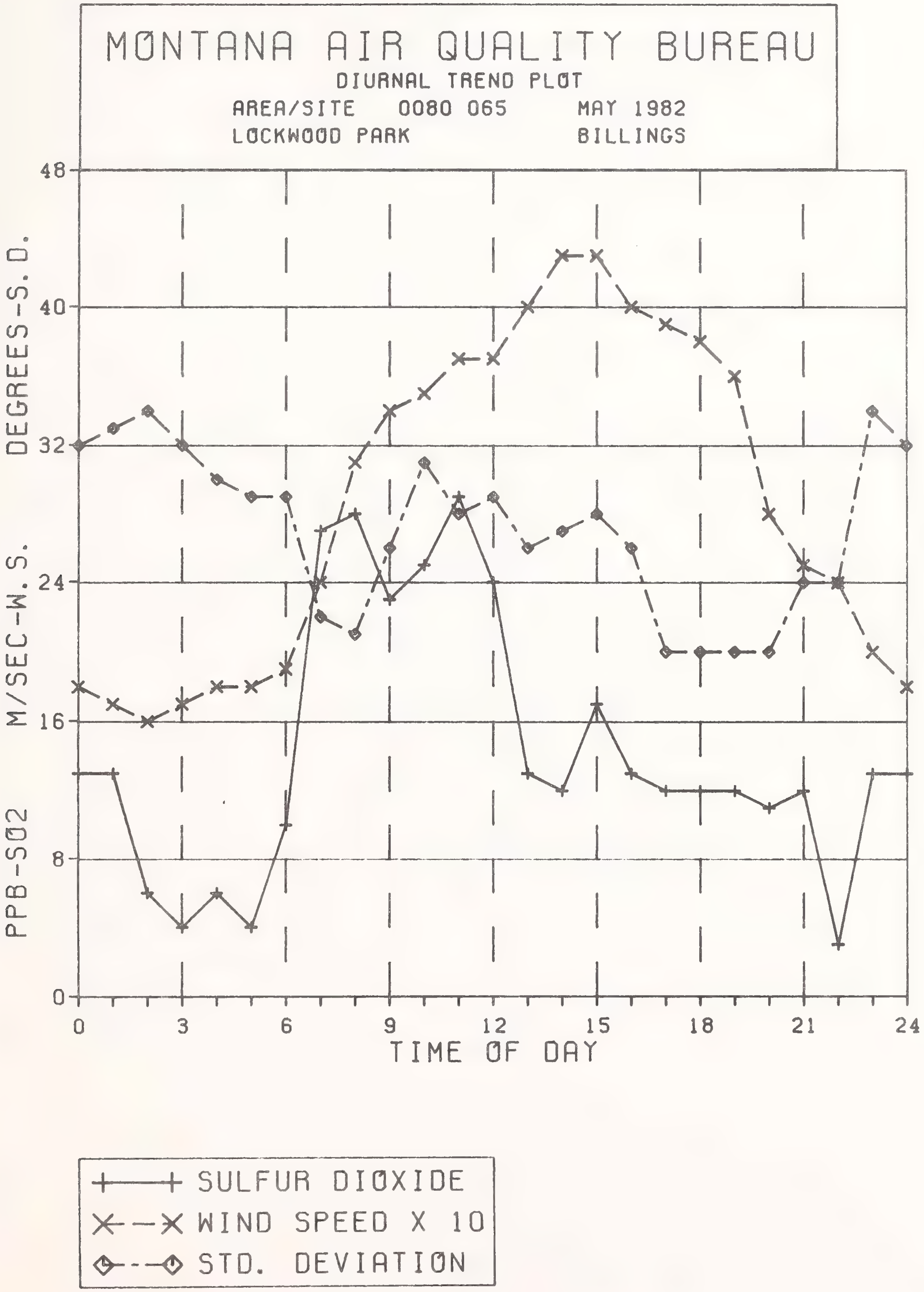

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 065
MAY 1982
LOCKWOOD PARK
BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
0
8
16
24
32
40
48
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 41

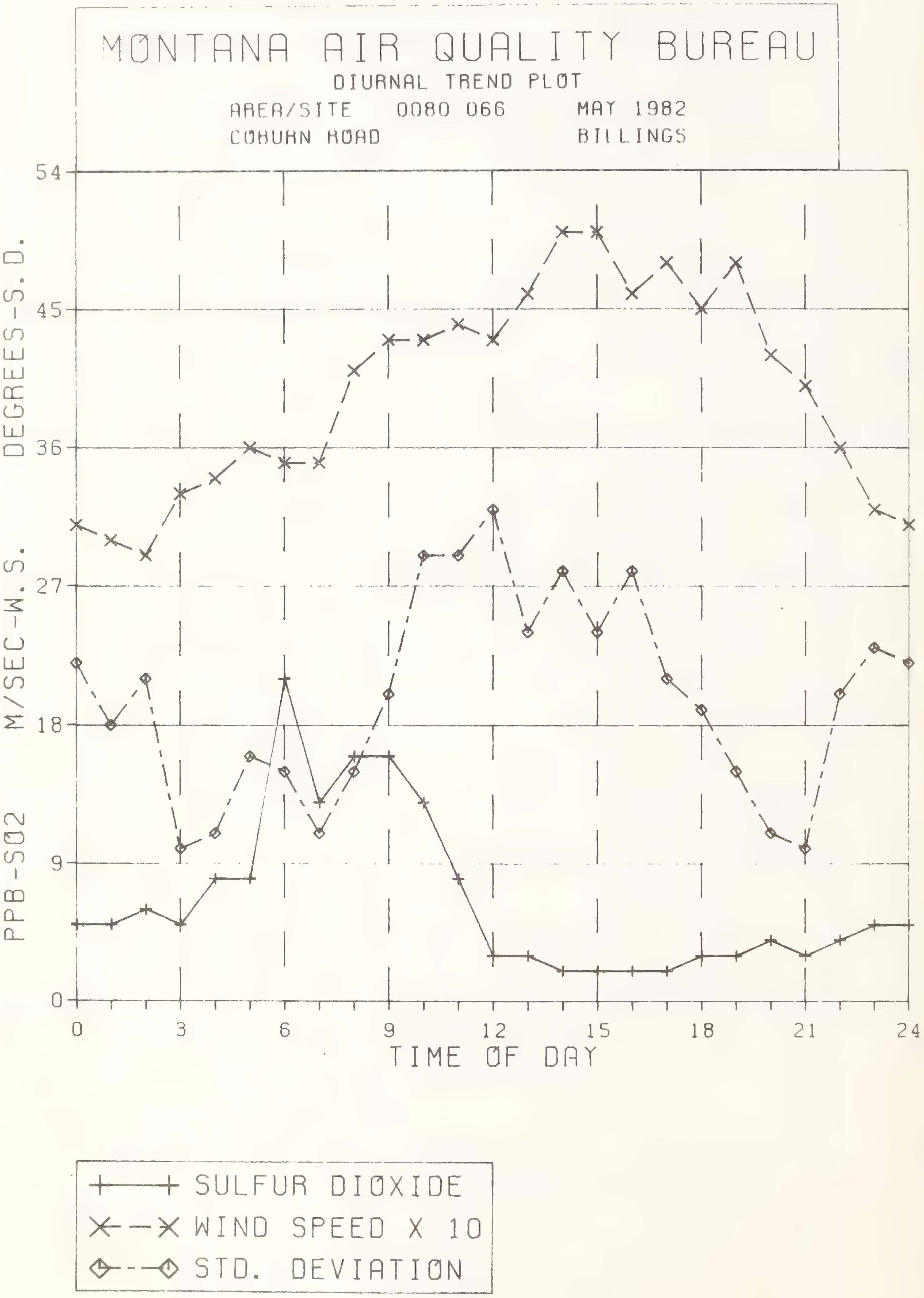

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 066
MAY 1982
COBURN ROAD
BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
54
45
36
27
18
9
0
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 42

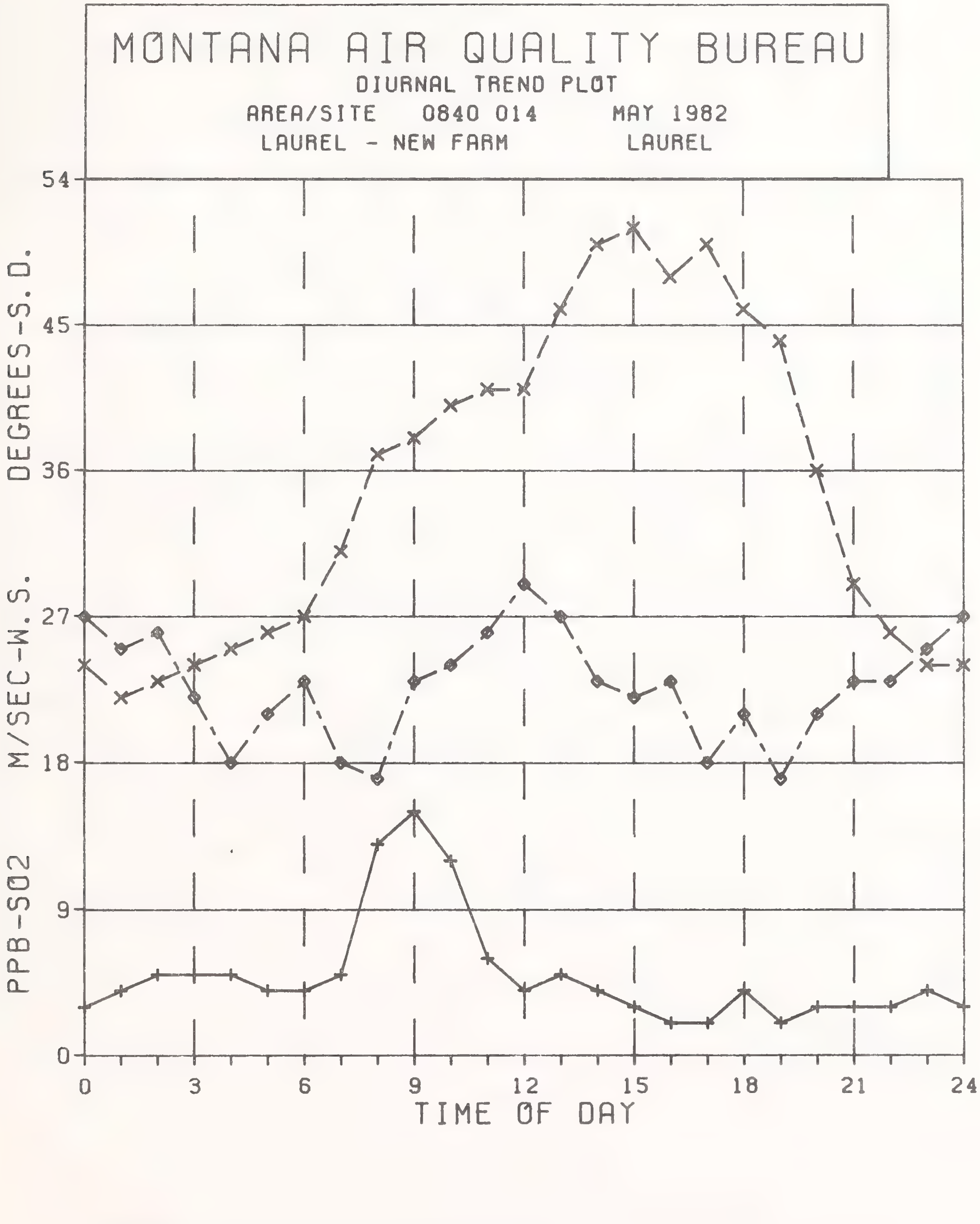

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0840 014 MAY 1982
LAUREL - NEW FARM LAUREL
DEGREES-S.D.
M/SEC-W.S.
PPB-SO2
54
45
36
27
18
9
0
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 43

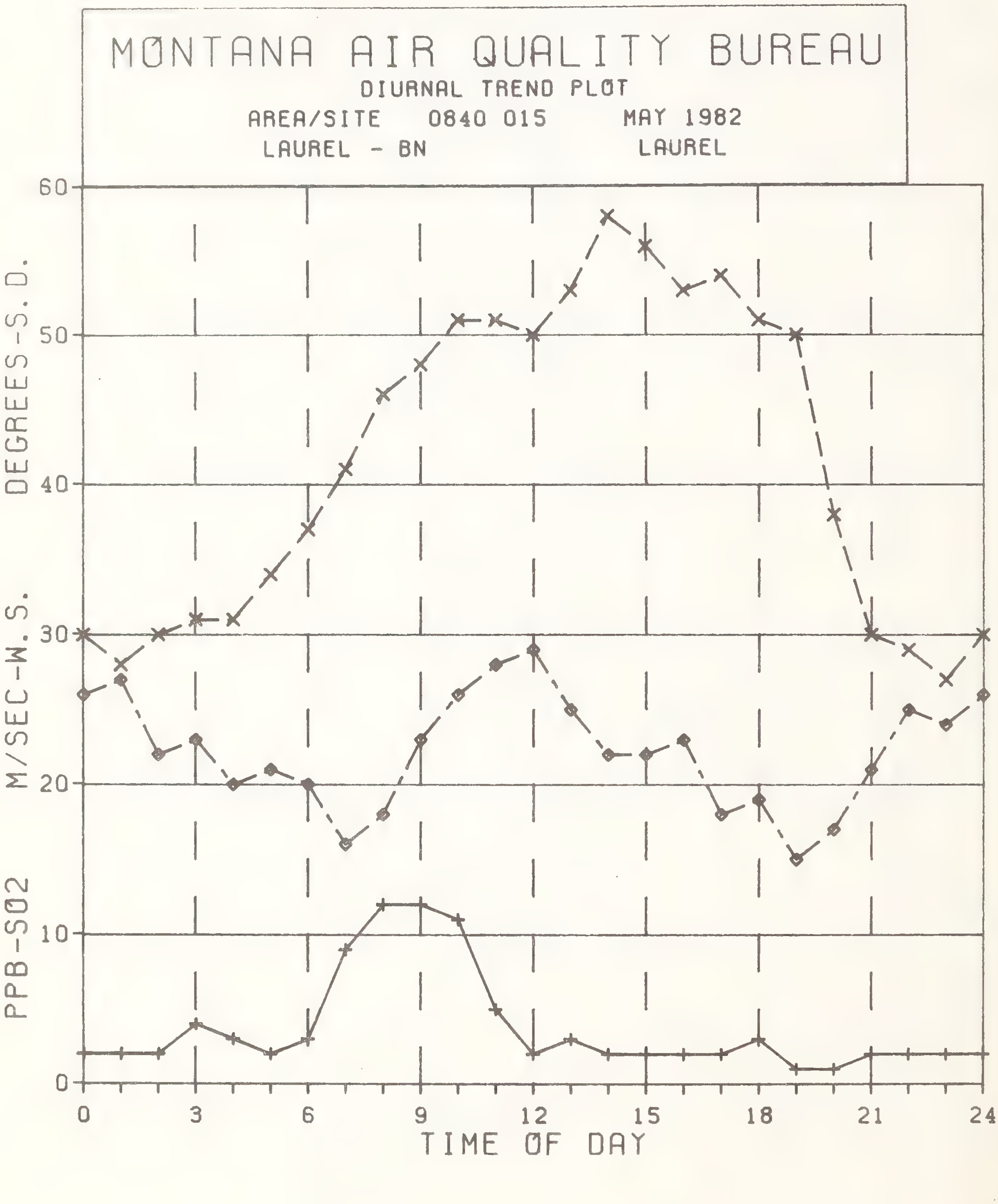

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0840 015 MAY 1982
LAUREL - BN LAUREL
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
60
50
40
30
20
10
0
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 44

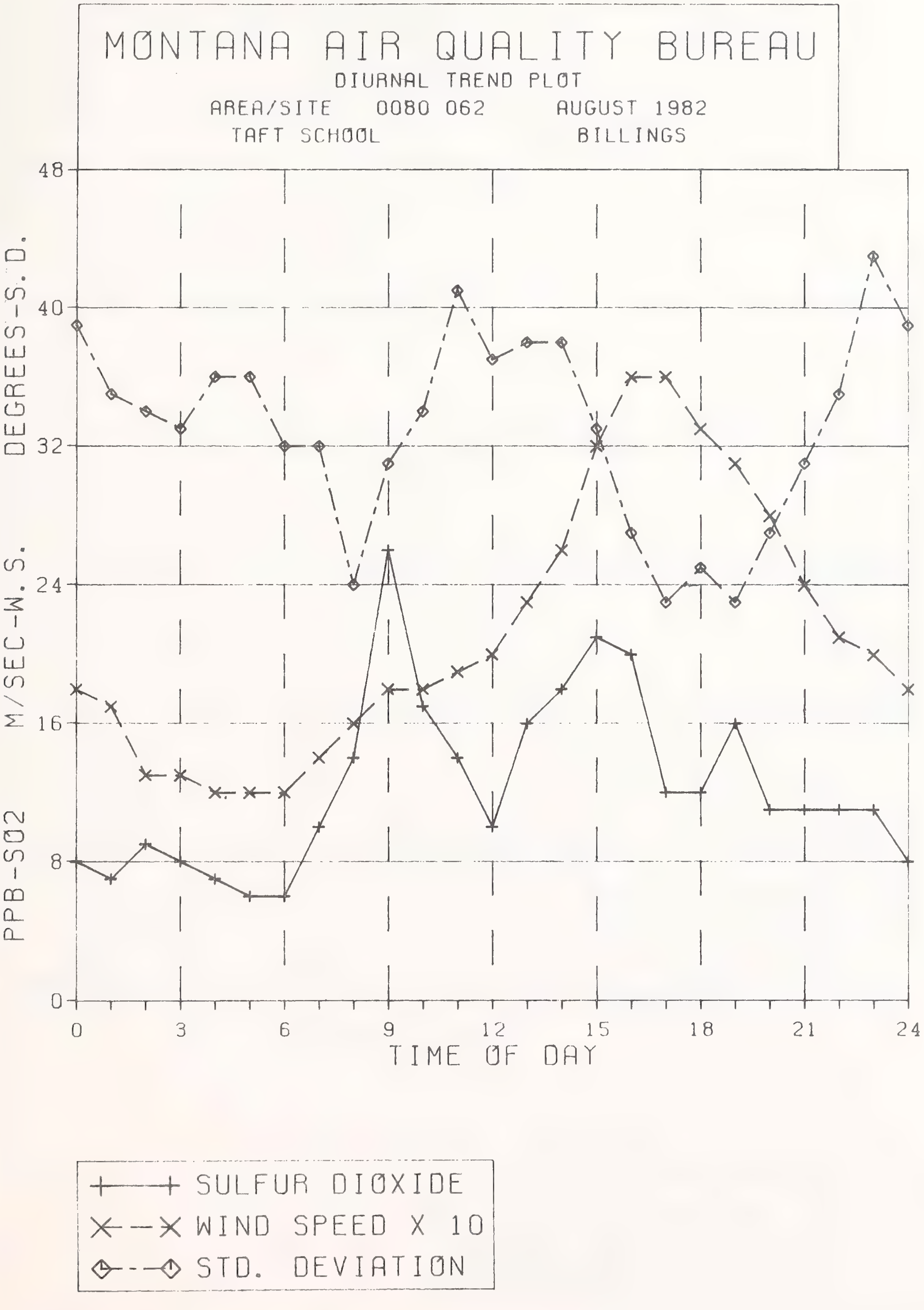

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 062 AUGUST 1982
TAFT SCHOOL BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
48
40
32
24
16
8
0
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 45

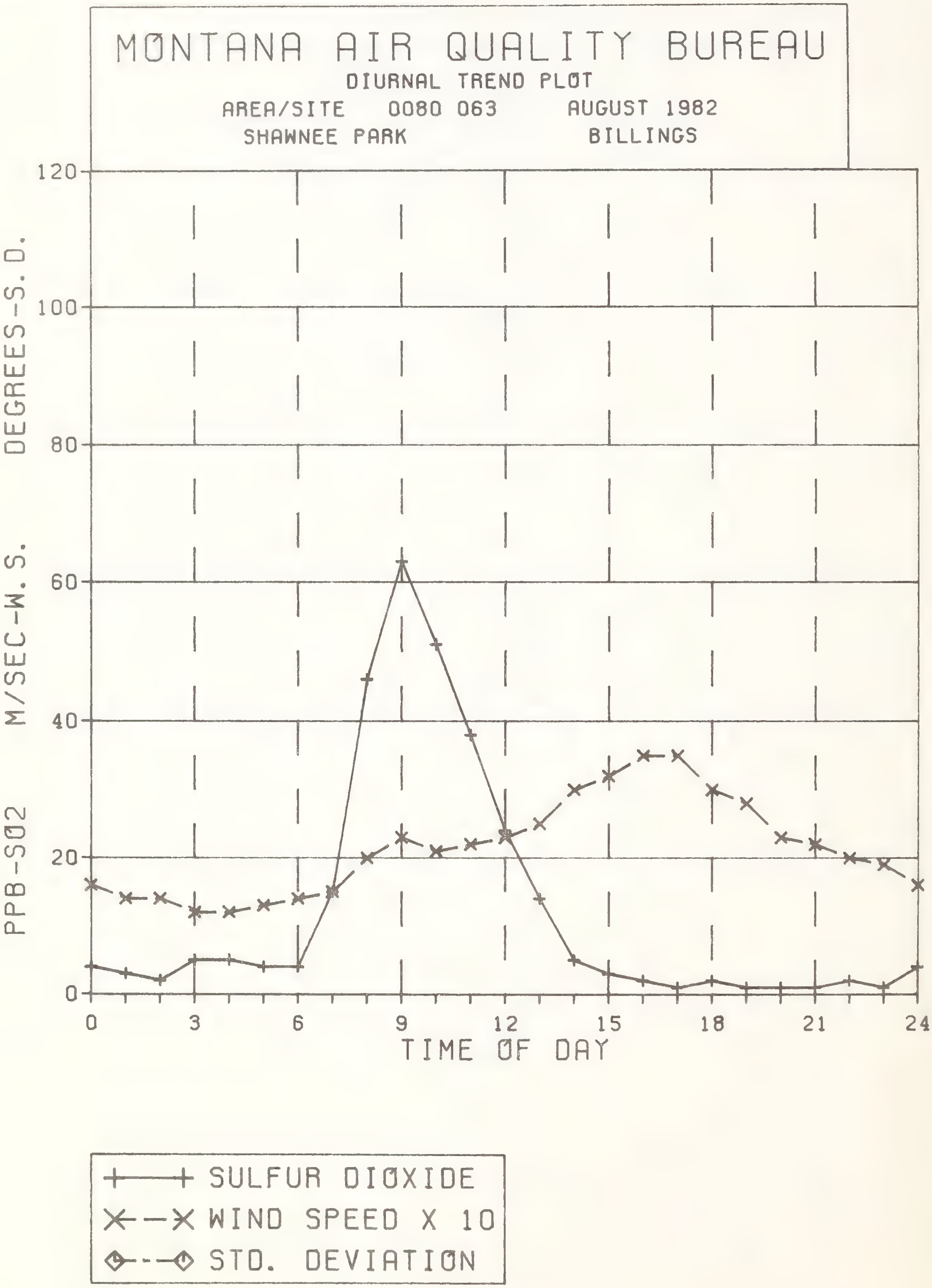

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 063
AUGUST 1982
SHAWNEE PARK
BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
120
100
80
60
40
20
0
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 46

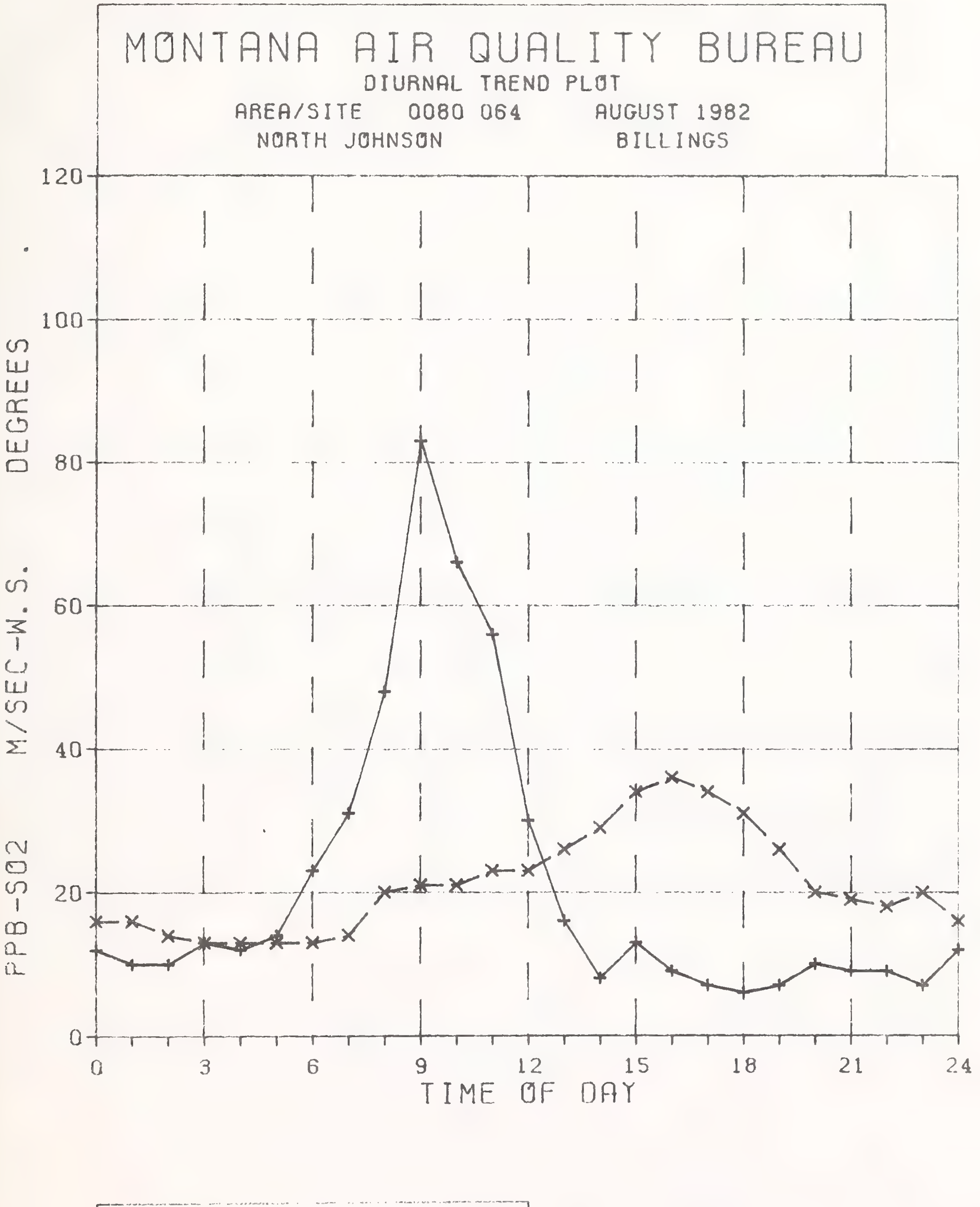

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 064 AUGUST 1982
NORTH JOHNSON BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES
120
100
80
60
40
20
0
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 47

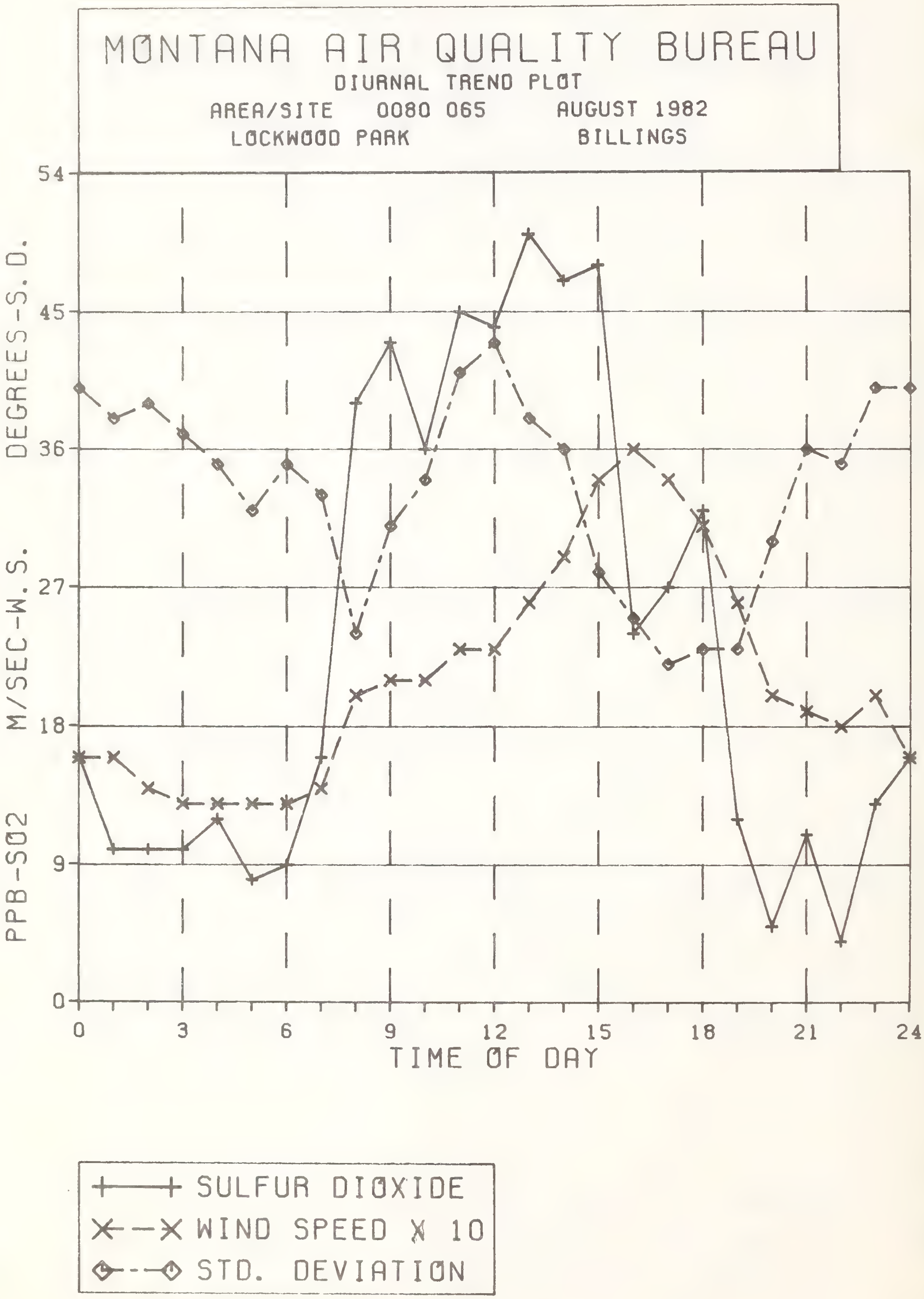

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 065 AUGUST 1982
LOCKWOOD PARK BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
0
9
18
27
36
45
54
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 48

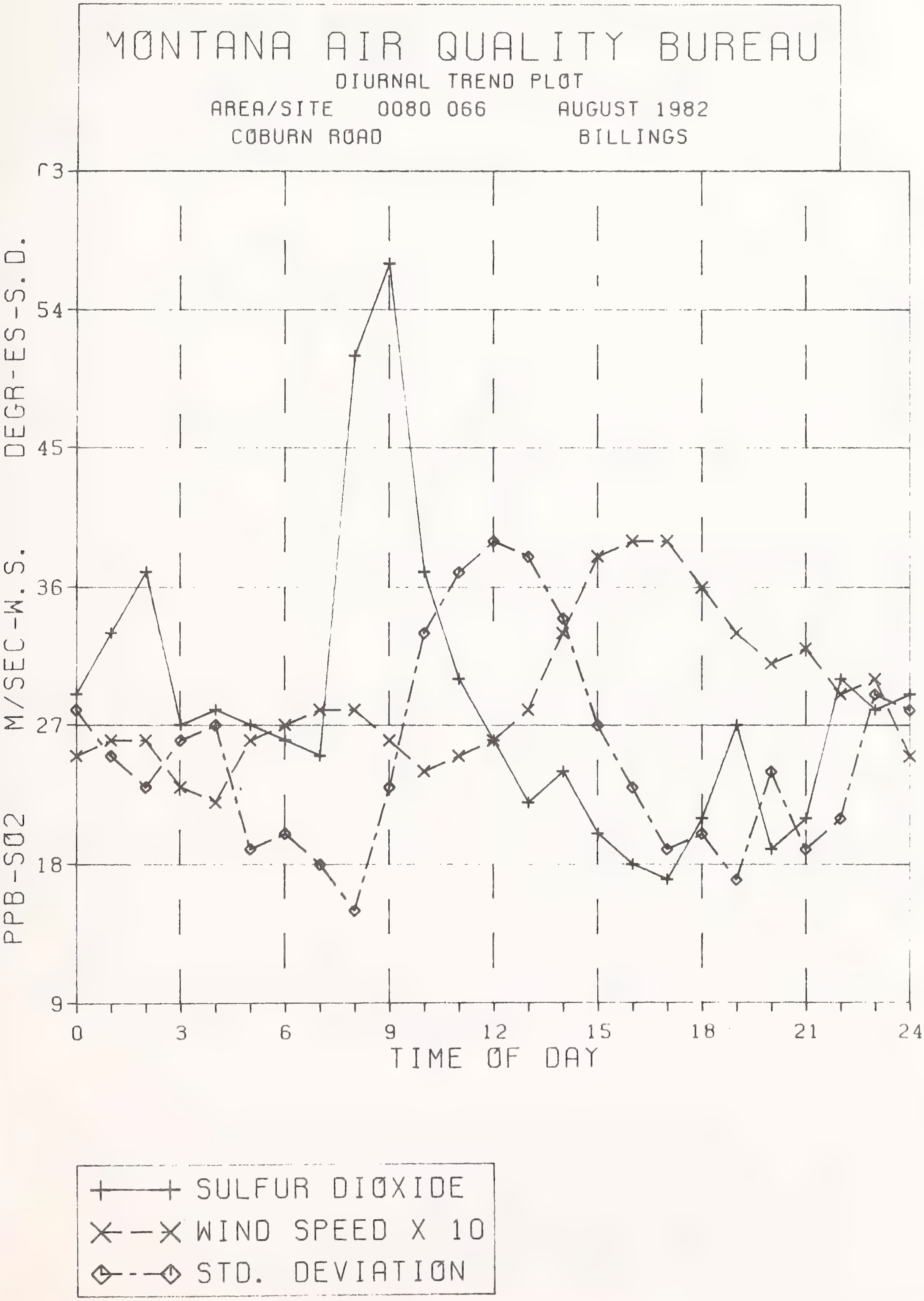

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 066 AUGUST 1982
COBURN ROAD BILLINGS
PPB-SO2 M/SEC-W.S. DEGR-ES-S.D.
63
54
45
36
27
18
9
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 49

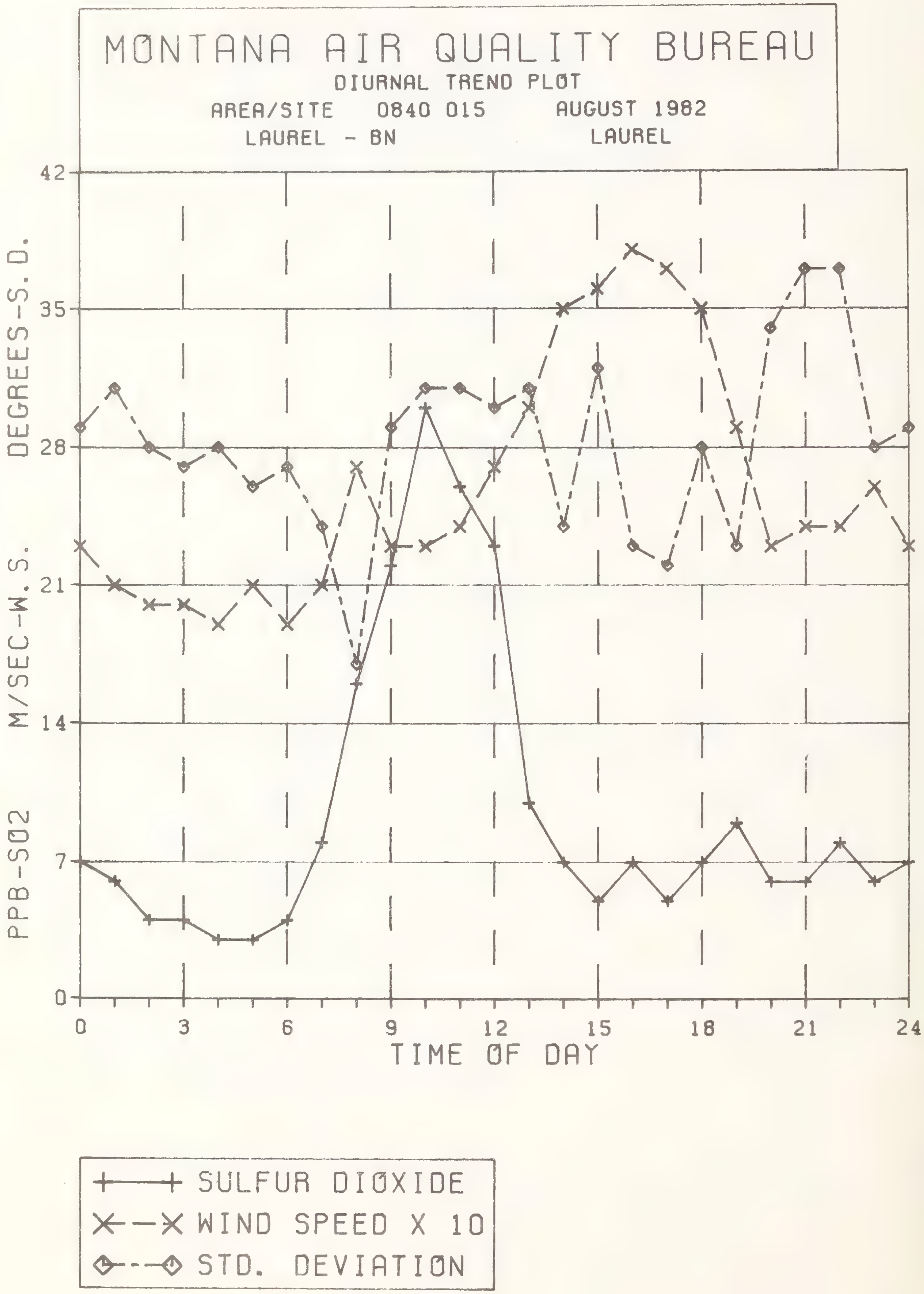

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0840 015 AUGUST 1982
LAUREL - BN LAUREL
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
0
7
14
21
28
35
42
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 50

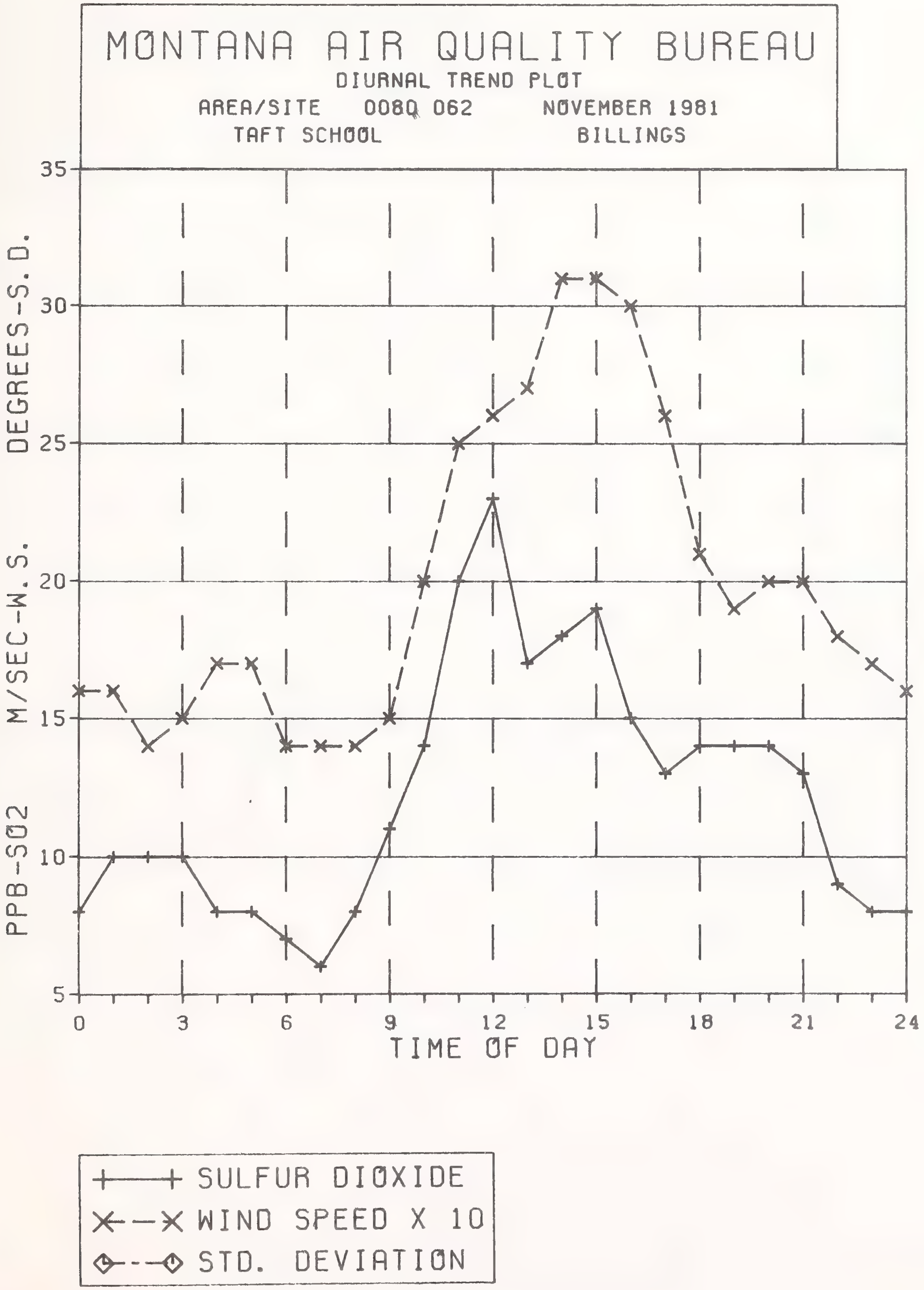

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 062 NOVEMBER 1981
TAFT SCHOOL BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
35
30
25
20
15
10
5
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 51

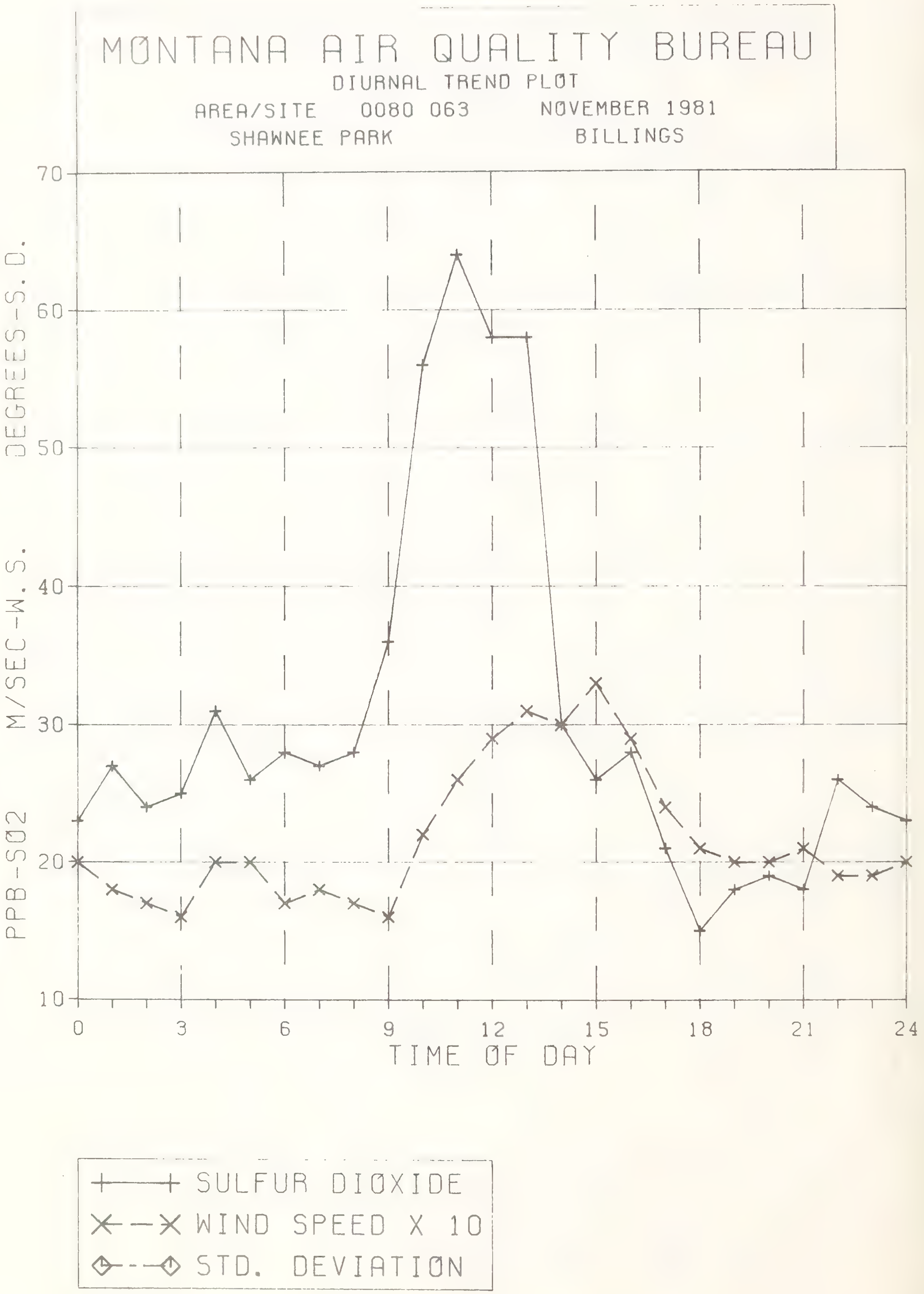

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 063
NOVEMBER 1981
SHAWNEE PARK
BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
70
60
50
40
30
20
10
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 52

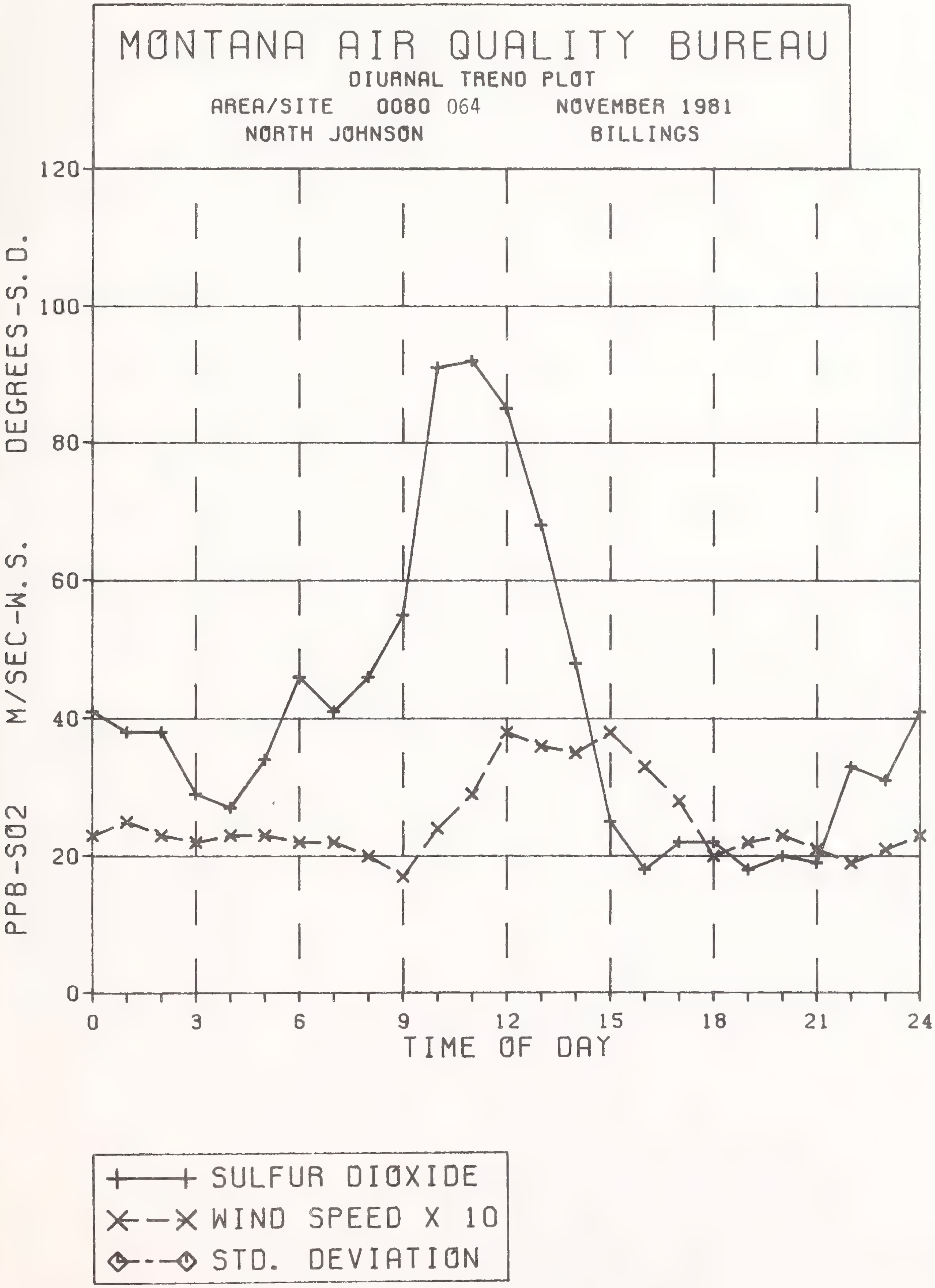

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 064
NOVEMBER 1981
NORTH JOHNSON
BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
0
20
40
60
80
100
120
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 53

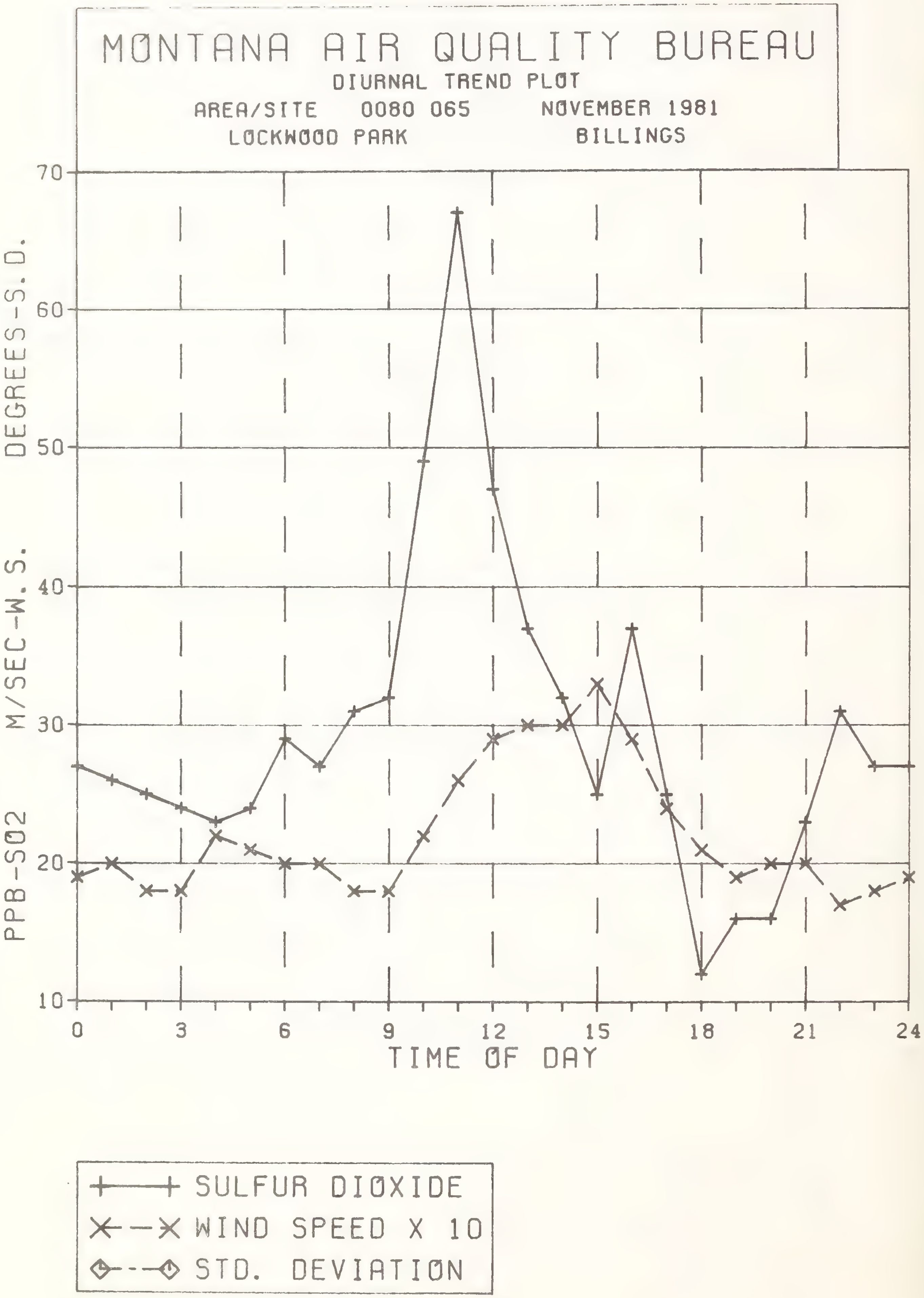

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 065
NOVEMBER 1981
LOCKWOOD PARK
BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
70
60
50
40
30
20
10
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 54

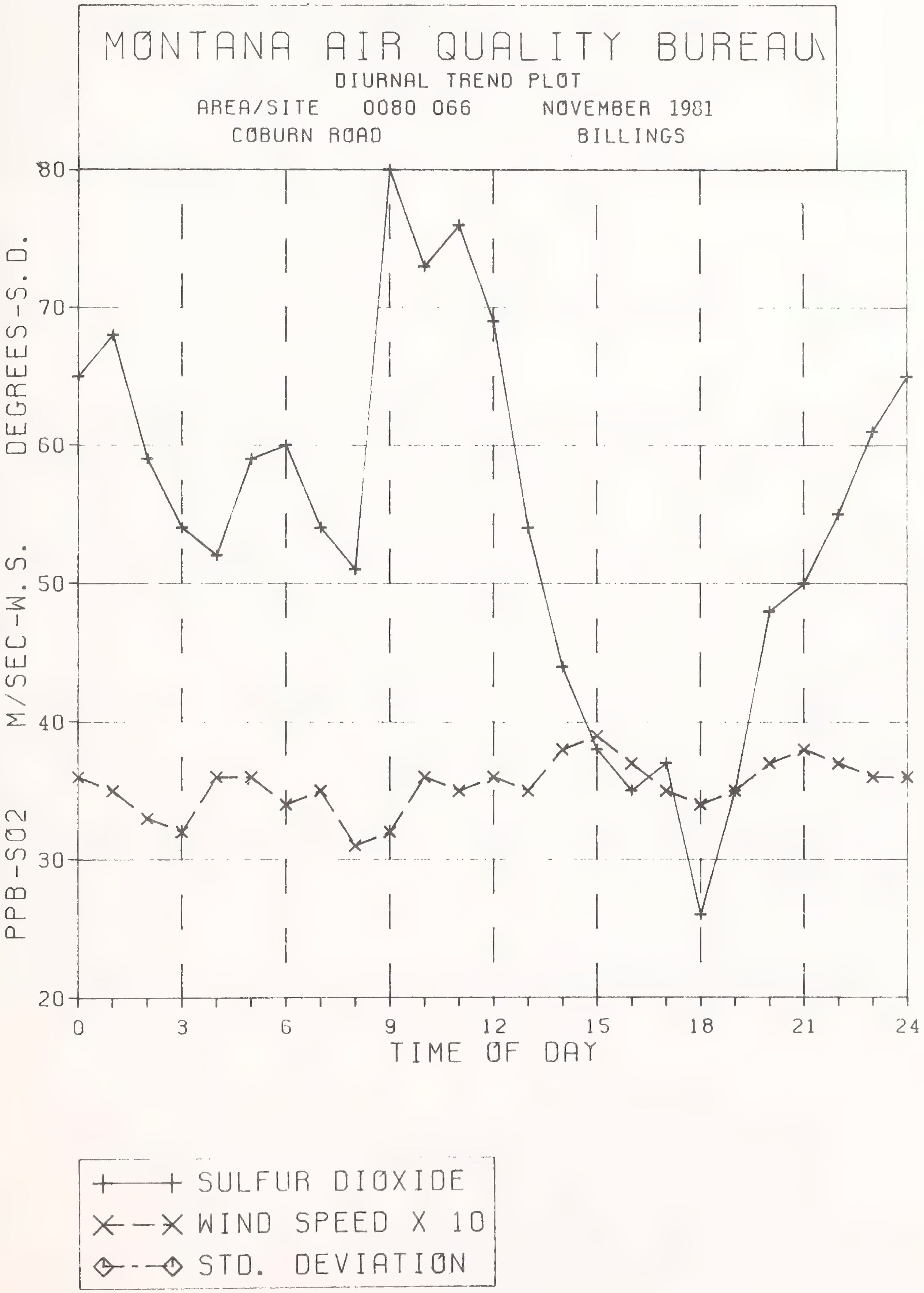

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0080 066 NOVEMBER 1981
COBURN ROAD BILLINGS
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
80
70
60
50
40
30
20
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 55

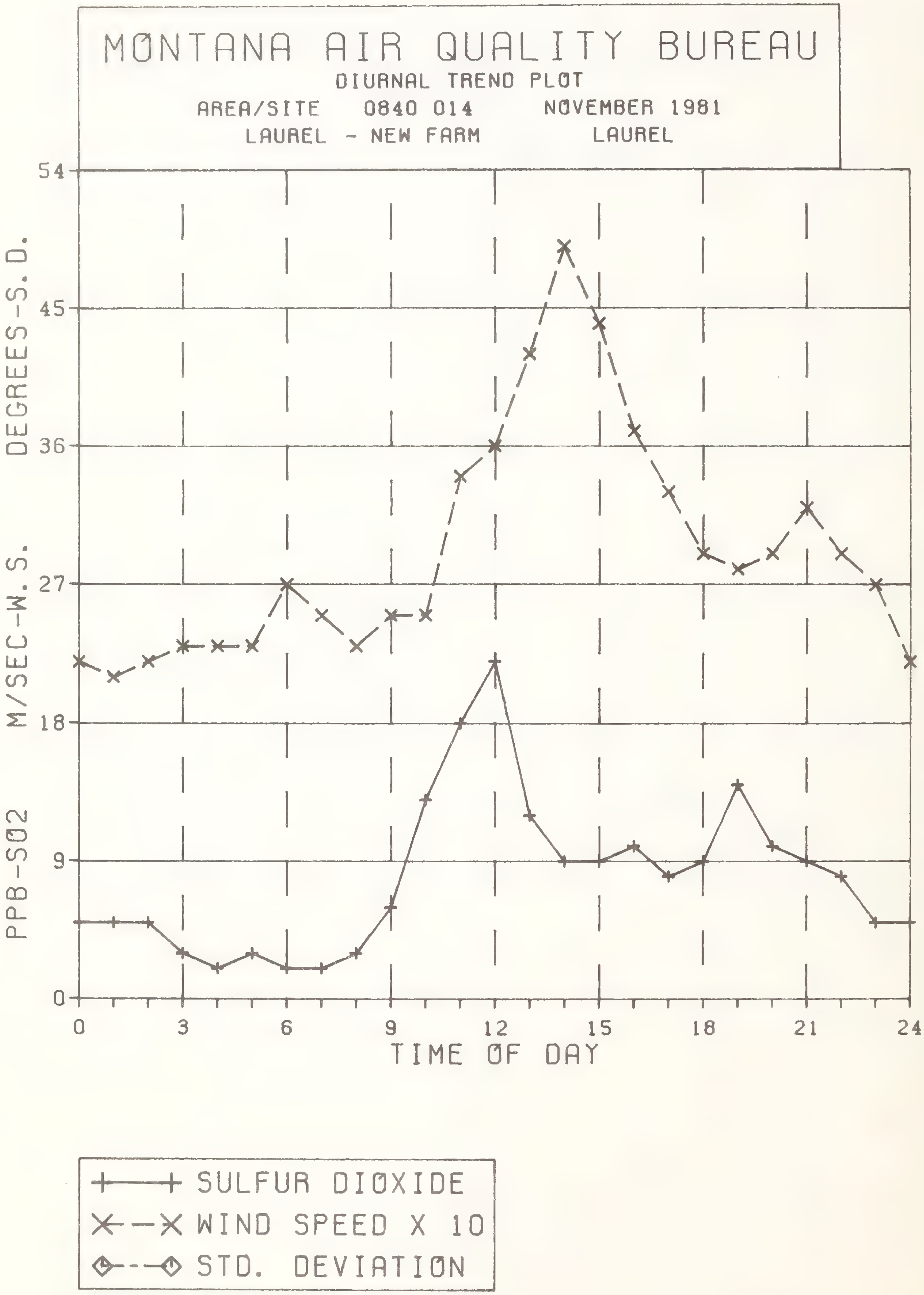

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0840 014 NOVEMBER 1981
LAUREL - NEW FARM LAUREL
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
54
45
36
27
18
9
0
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 56

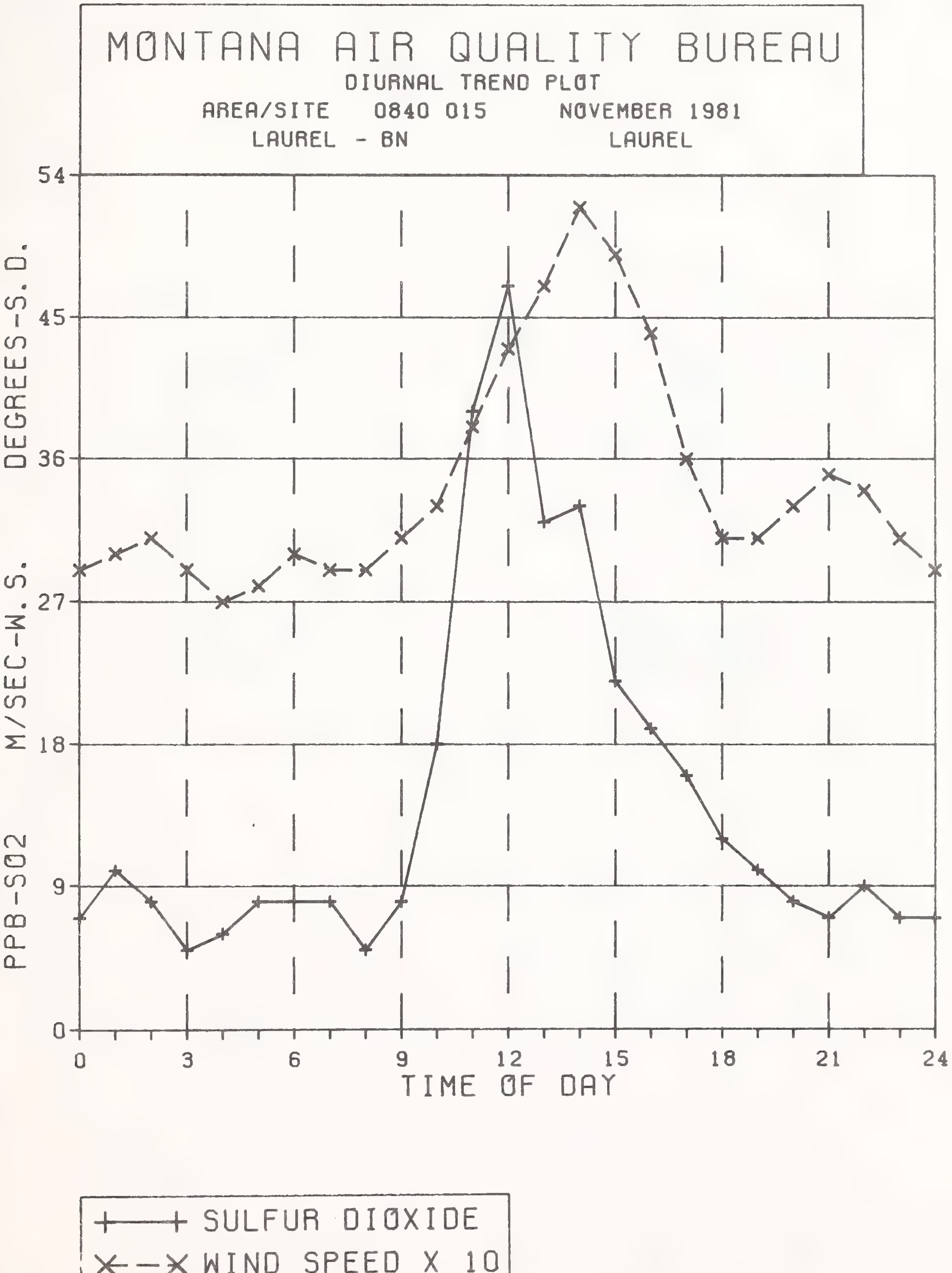
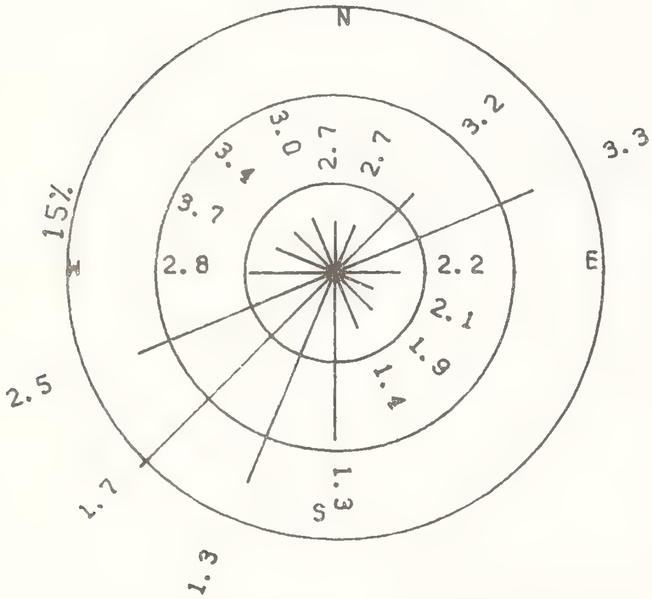

MONTANA AIR QUALITY BUREAU
DIURNAL TREND PLOT
AREA/SITE 0840 015 NOVEMBER 1981
LAUREL - BN LAUREL
PPB-SO2 M/SEC-W.S. DEGREES-S.D.
0
9
18
27
36
45
54
0
3
6
9
12
15
18
21
24
TIME OF DAY
SULFUR DIOXIDE
WIND SPEED X 10
STD. DEVIATION

Figure 57

SURFACE WIND ROSES

SITE: 80062 TAFT SCHOOL

BILLINGS MONTANA



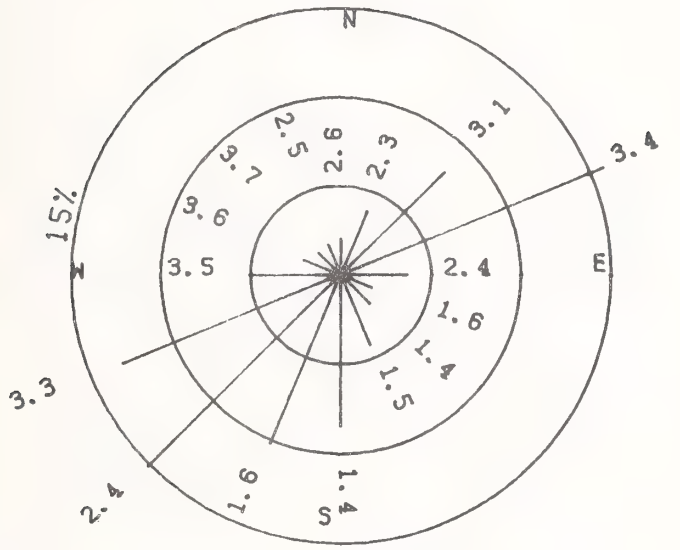
1/1/82 TO 12/31/82
HOURS 0 TO 23
CALM 0.1%
(TOTAL HOURS 8740)

Figure 58

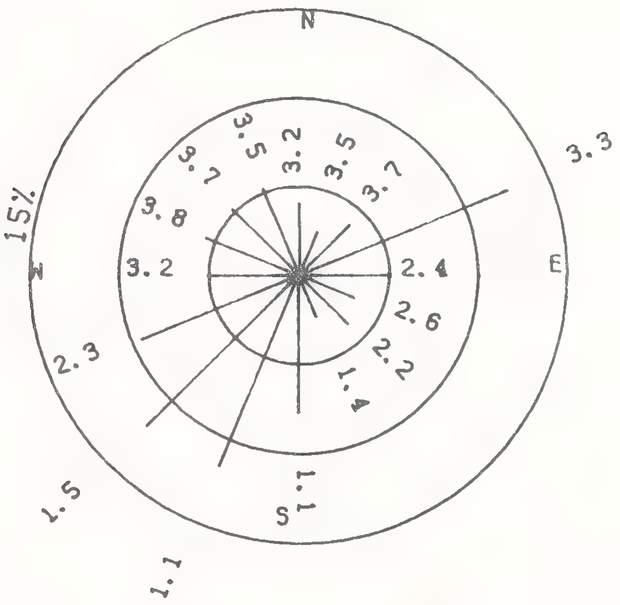
SURFACE WIND ROSES

SITE: 80062 TAFT SCHOOL

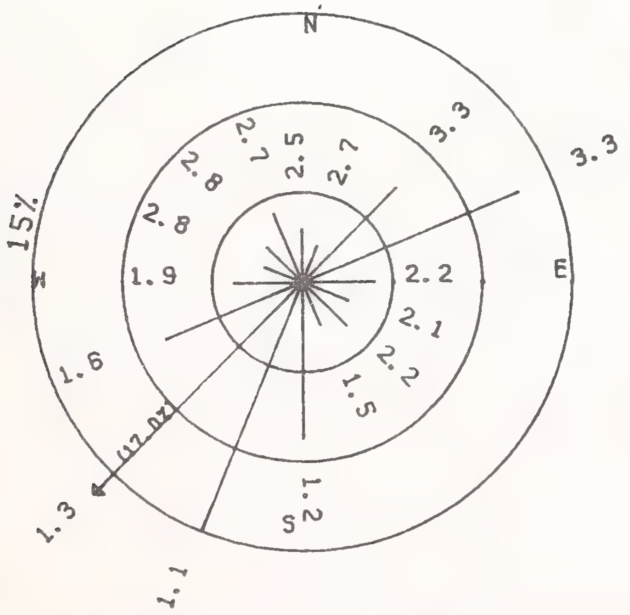
BILLINGS MONTANA



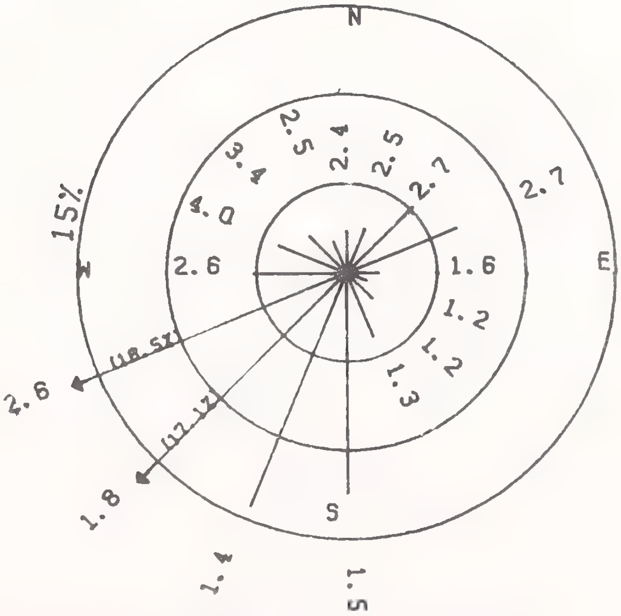
1/1/82 TO 3/31/82
HOURS 0 TO 23
CALM 0.3%
(TOTAL HOURS 2143)



4/1/82 TO 6/30/82
HOURS 0 TO 23
CALM 0.1%
(TOTAL HOURS 2181)



7/1/82 TO 9/30/82
HOURS 0 TO 23
CALM 0.0%
(TOTAL HOURS 2208)



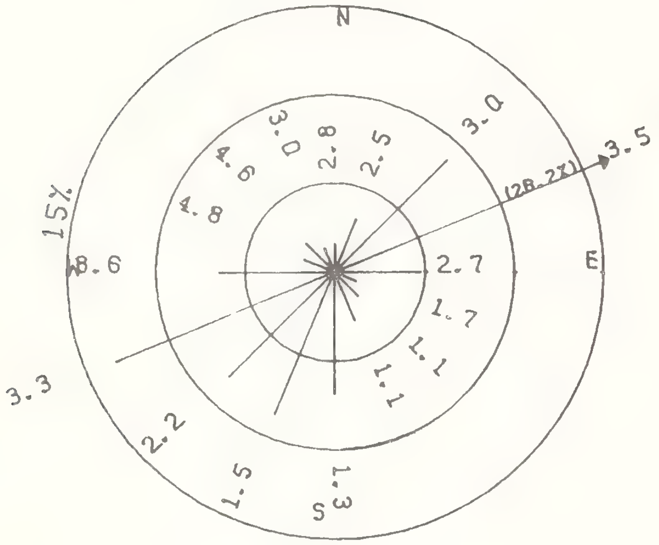
10/1/81 TO 12/31/81
HOURS 0 TO 23
CALM 0.0%
(TOTAL HOURS 2208)

Figure 59

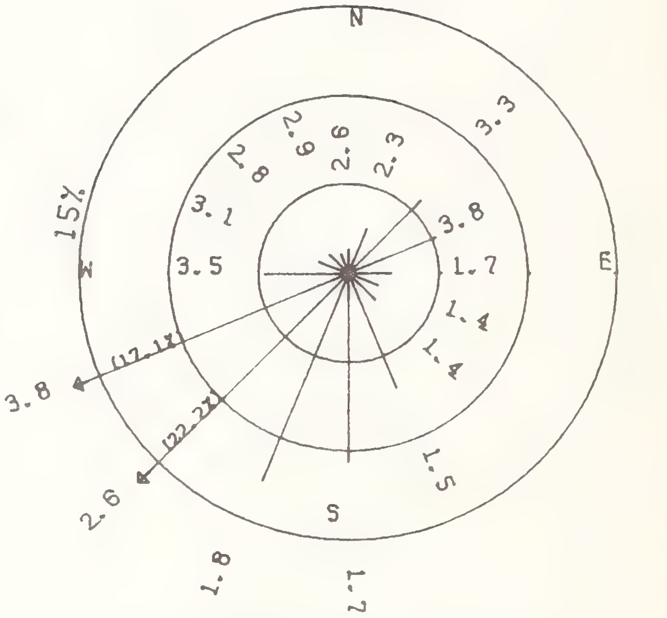
SURFACE WIND ROSES

SITE: 80062 TAFT SCHOOL

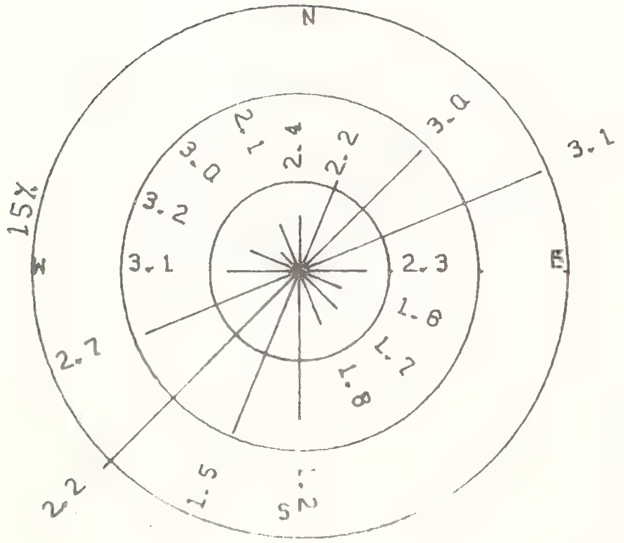
BILLINGS MONTANA



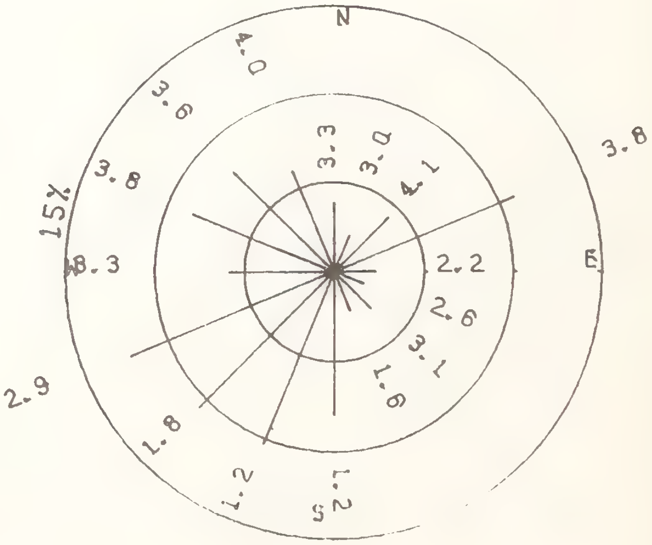
JANUARY 1982
HOURS 0 TO 23
CALM 0.0%
(TOTAL HOURS 744)



FEBRUARY 1982
HOURS 0 TO 23
CALM 0.0%
(TOTAL HOURS 662)



MARCH 1982
HOURS 0 TO 23
CALM 0.9%
(TOTAL HOURS 737)



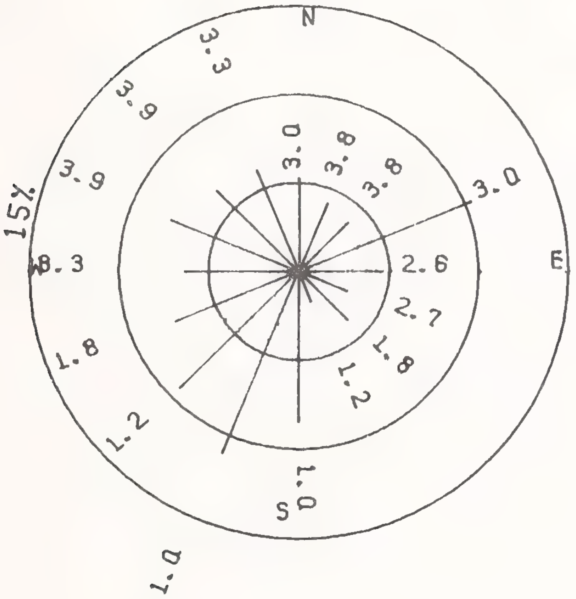
APRIL 1982
HOURS 0 TO 23
CALM 0.0%
(TOTAL HOURS 720)

Figure 60

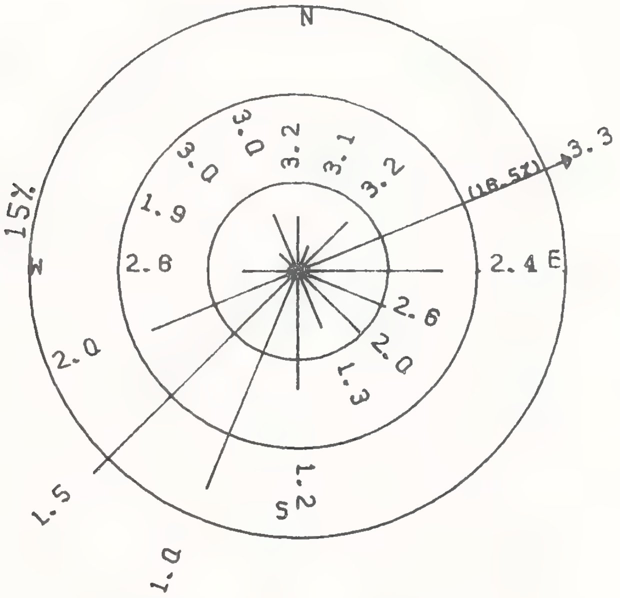
SURFACE WIND ROSES

SITE: 80062 TAFT SCHOOL

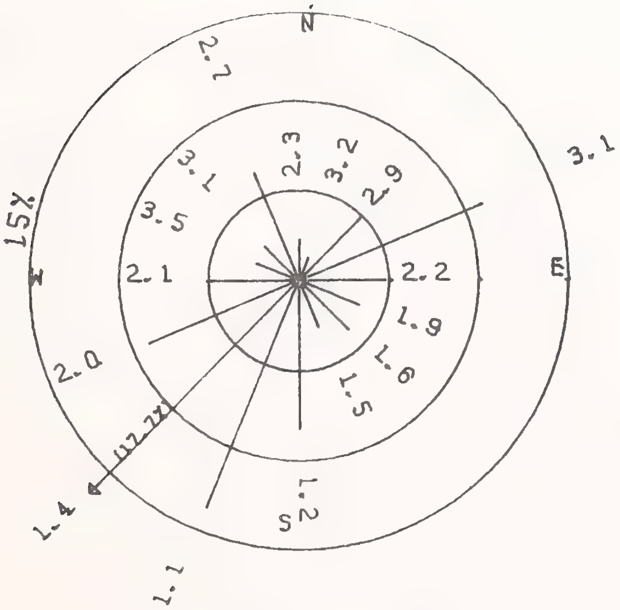
BILLINGS MONTANA



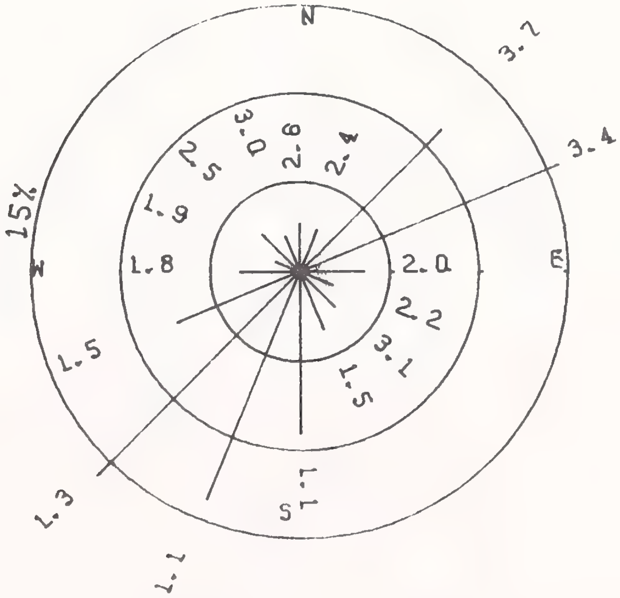
MAY 1982
HOURS 0 TO 23
CALM 0.1%
(TOTAL HOURS 743)



JUNE 1982
HOURS 0 TO 23
CALM 0.3%
(TOTAL HOURS 718)



JULY 1982
HOURS 0 TO 23
CALM 0.0%
(TOTAL HOURS 744)



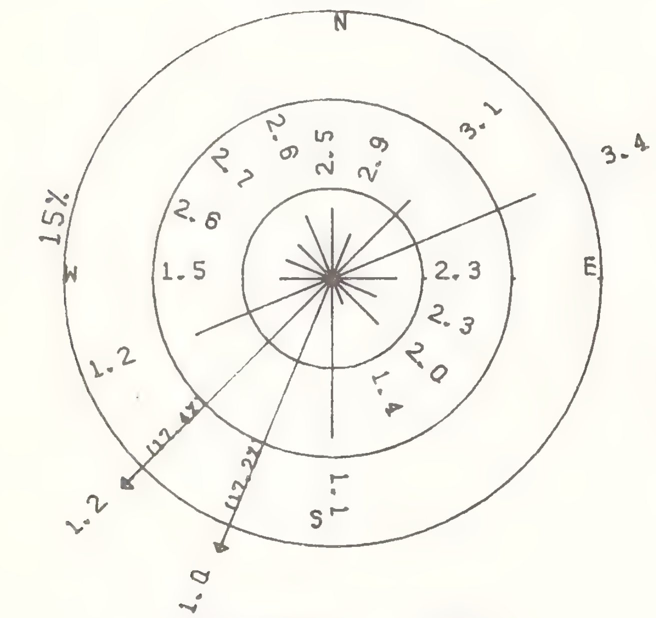
AUGUST 1982
HOURS 0 TO 23
CALM 0.0%
(TOTAL HOURS 744)

Figure 61

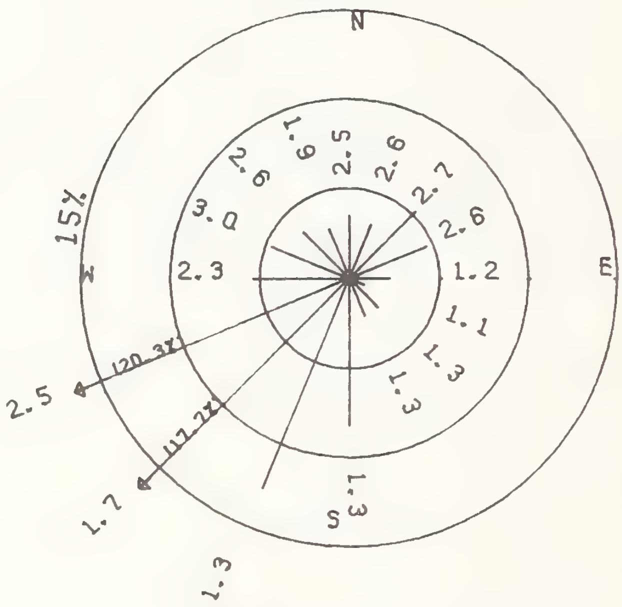
SURFACE WIND ROSES

SITE: 80062 TAFT SCHOOL

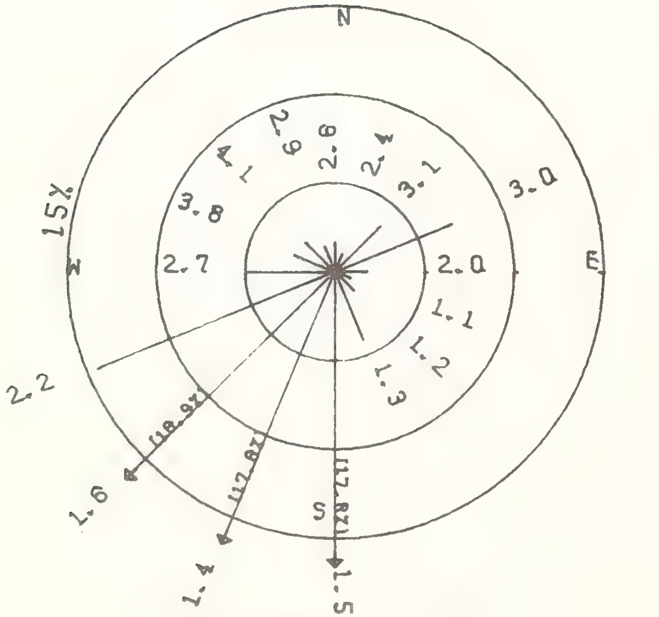
BILLINGS MONTANA



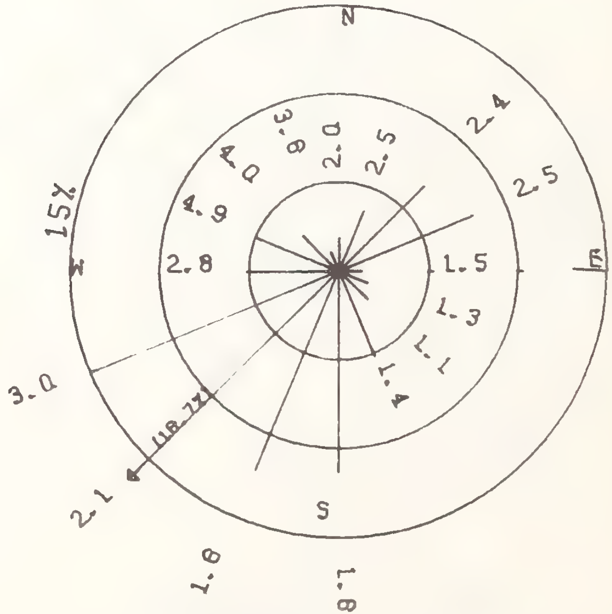
SEPTEMBER 1982
HOURS 0 TO 23
CALM 0.0%
(TOTAL HOURS 720)



OCTOBER 1981
HOURS 0 TO 23
CALM 0.0%
(TOTAL HOURS 744)



NOVEMBER 1981
HOURS 0 TO 23
CALM 0.0%
(TOTAL HOURS 720)



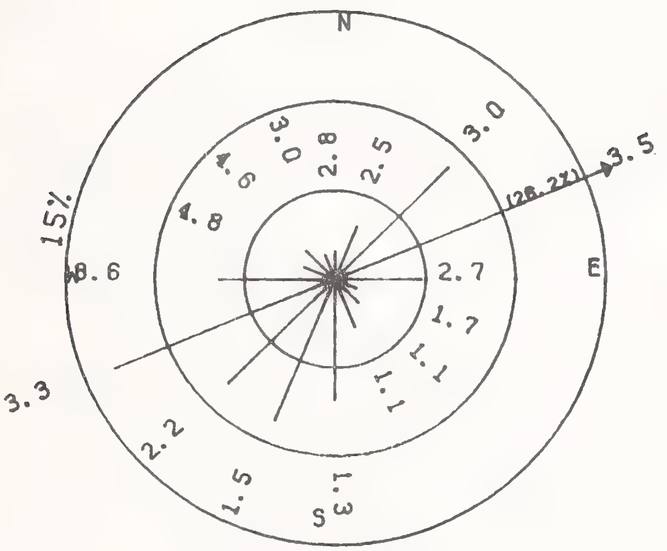
DECEMBER 1981
HOURS 0 TO 23
CALM 0.0%
(TOTAL HOURS 744)

Figure 62

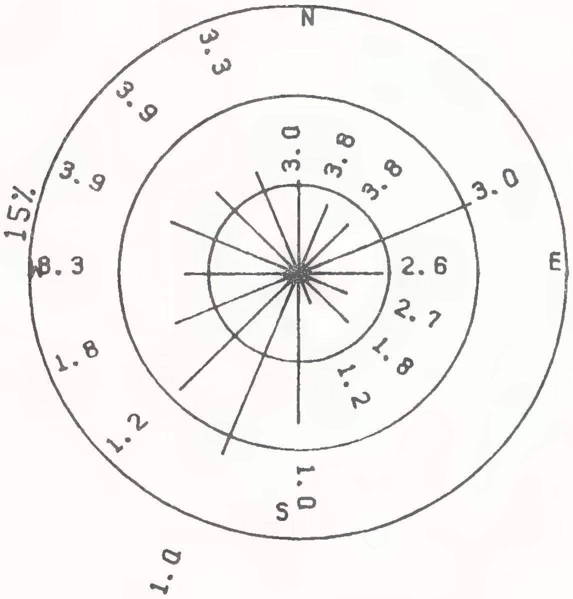
SURFACE WIND ROSES

SITE: 80062 TAFT SCHOOL

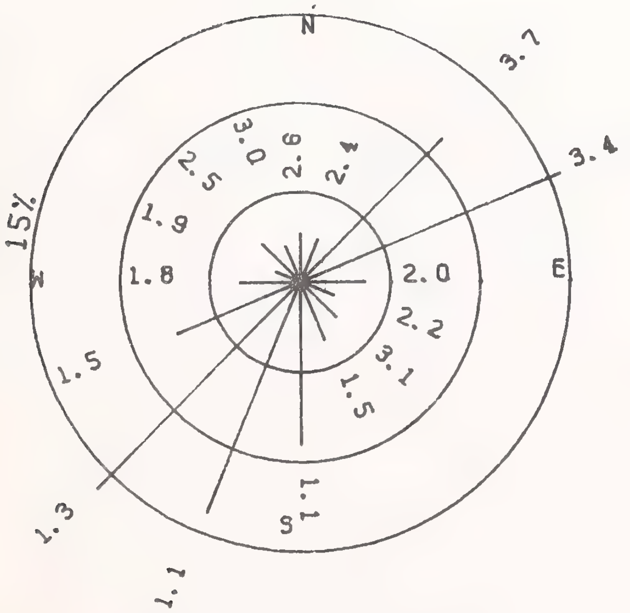
BILLINGS MONTANA



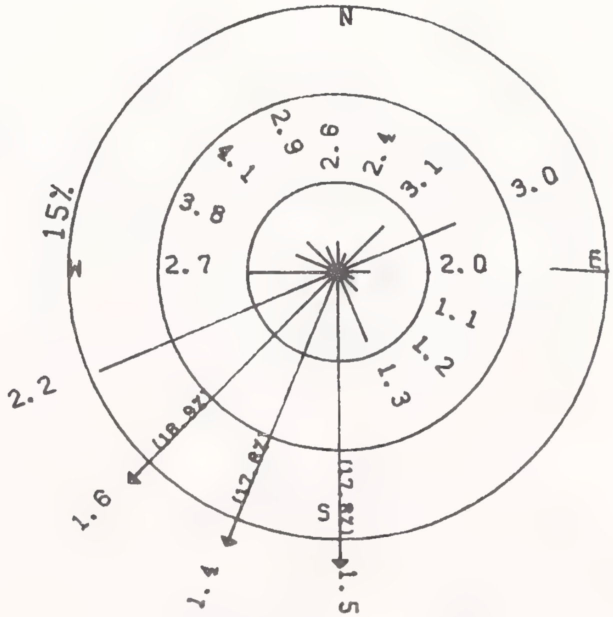
JANUARY 1982
HOURS 0 TO 23
CALM 0.0%
(TOTAL HOURS 744)



MAY 1982
HOURS 0 TO 23
CALM 0.1%
(TOTAL HOURS 743)



AUGUST 1982
HOURS 0 TO 23
CALM 0.0%
(TOTAL HOURS 744)



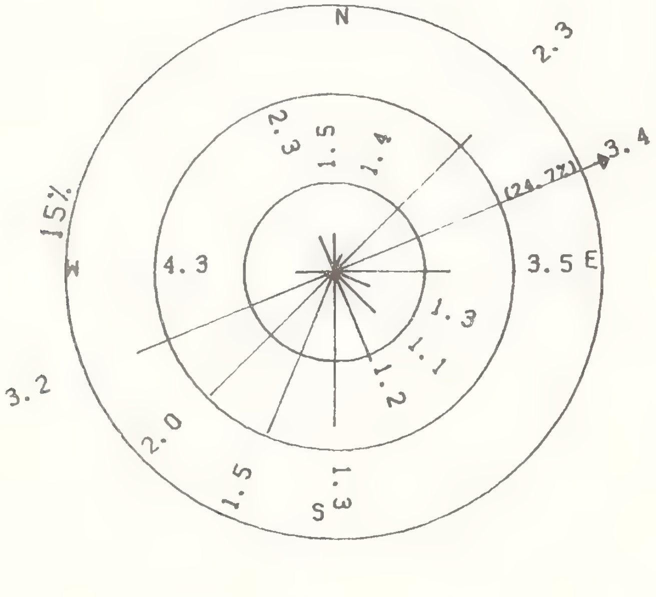
NOVEMBER 1981
HOURS 0 TO 23
CALM 0.0%
(TOTAL HOURS 720)

Figure 63

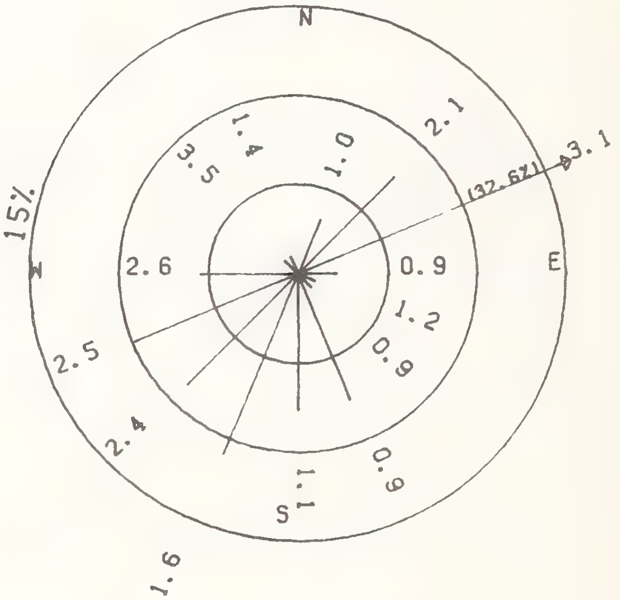
SURFACE WIND ROSES

SITE: 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR JANUARY 1982

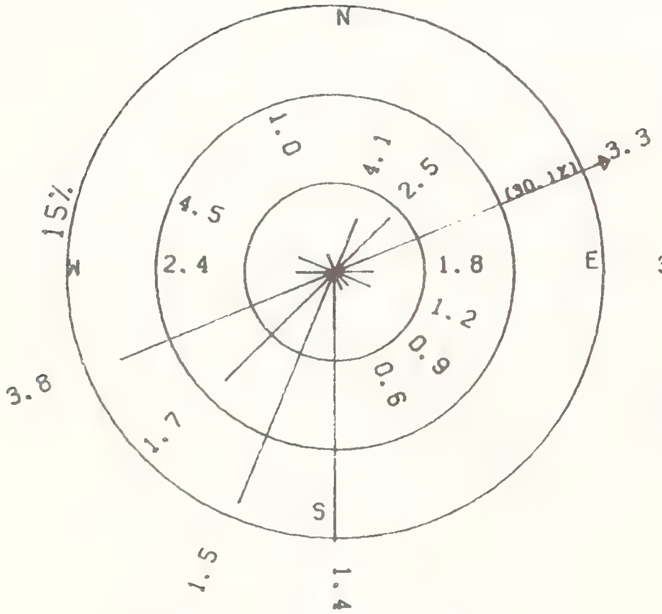
BILLINGS MONTANA



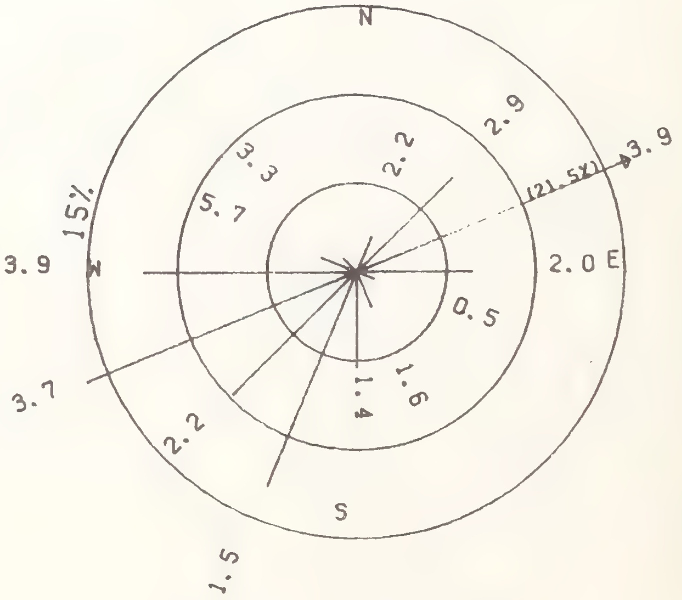
HOURS 1 TO 300
CALM 0.0%
(TOTAL HOURS 93)



HOURS 4 TO 600
CALM 0.0%
(TOTAL HOURS 92)



HOURS 7 TO 900
CALM 0.0%
(TOTAL HOURS 93)



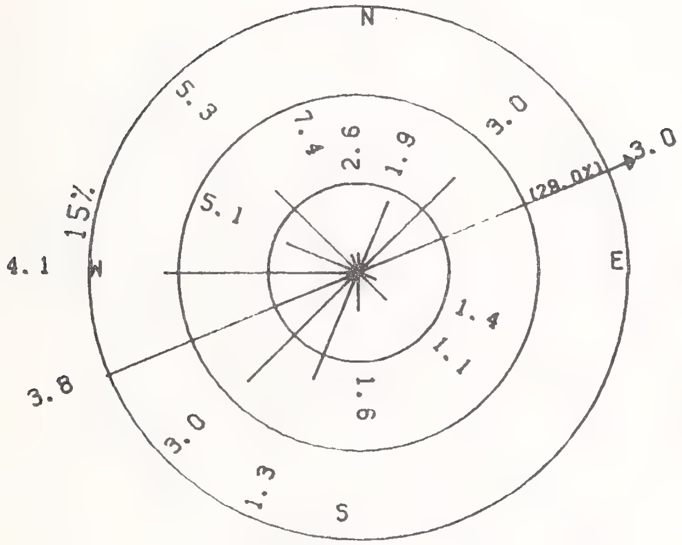
HOURS 10 TO 1200
CALM 0.0%
(TOTAL HOURS 93)

Figure 64

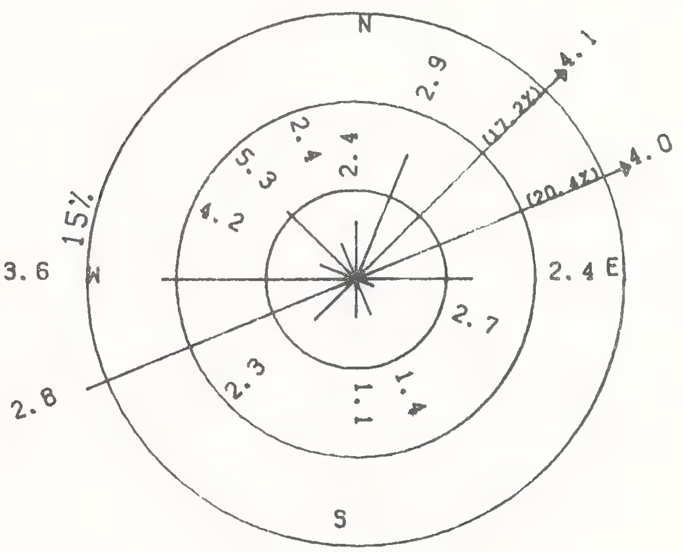
SURFACE WIND ROSES

SITE: 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR JANUARY 1982

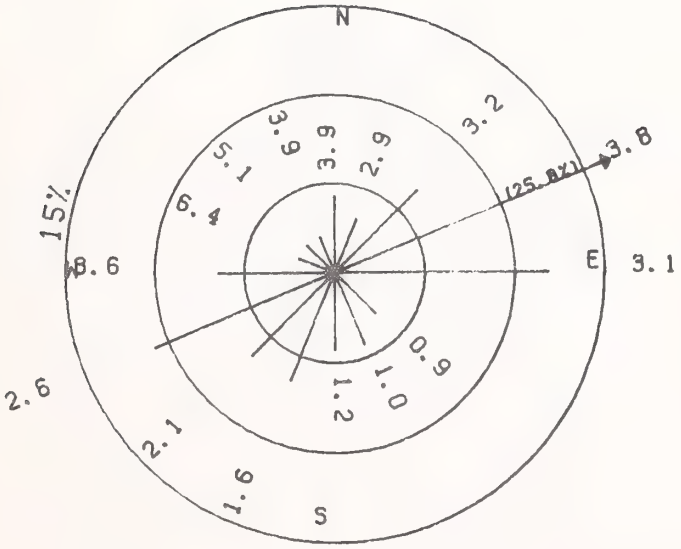
BILLINGS MONTANA



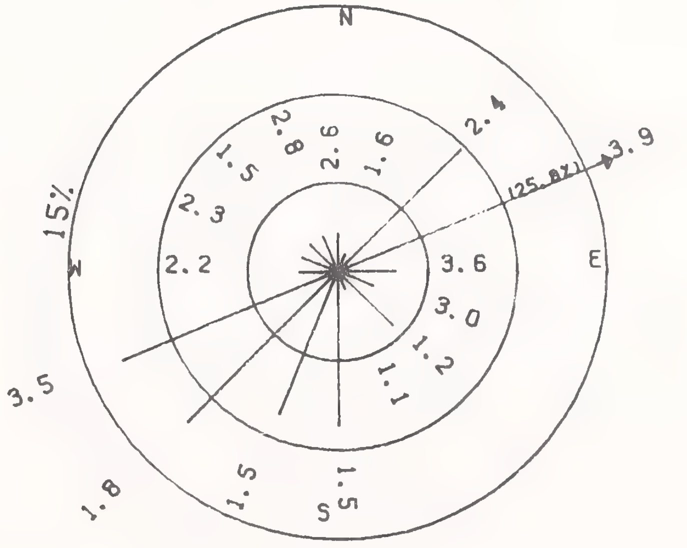
HOURS 13 TO 1500
CALM 0.0%
(TOTAL HOURS 93)



HOURS 16 TO 1800
CALM 0.0%
(TOTAL HOURS 93)



HOURS 19 TO 2100
CALM 0.0%
(TOTAL HOURS 93)



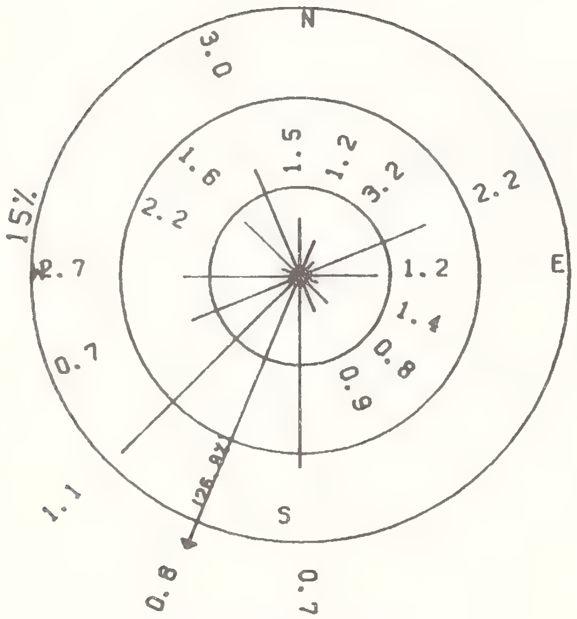
HOURS 22 TO 2400
CALM 0.0%
(TOTAL HOURS 93)

Figure 65

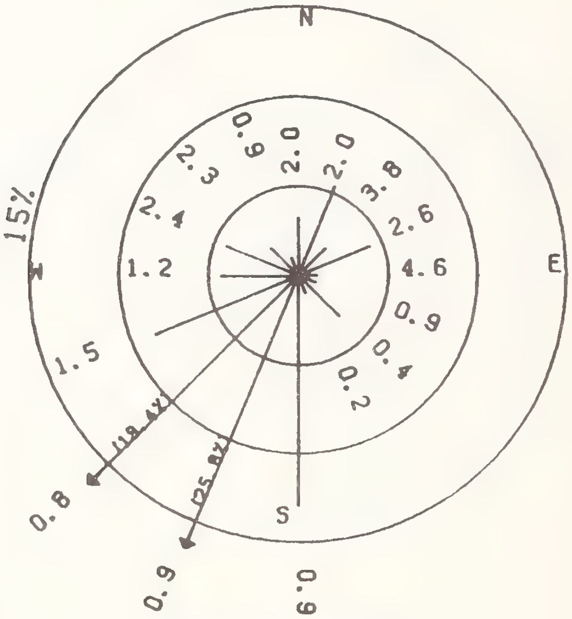
SURFACE WIND ROSES

SITE: 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR MAY 1982

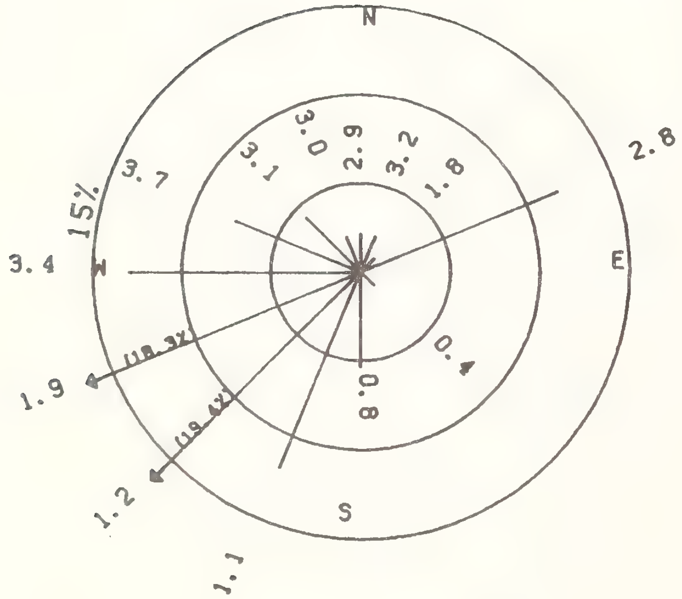
BILLINGS MONTANA



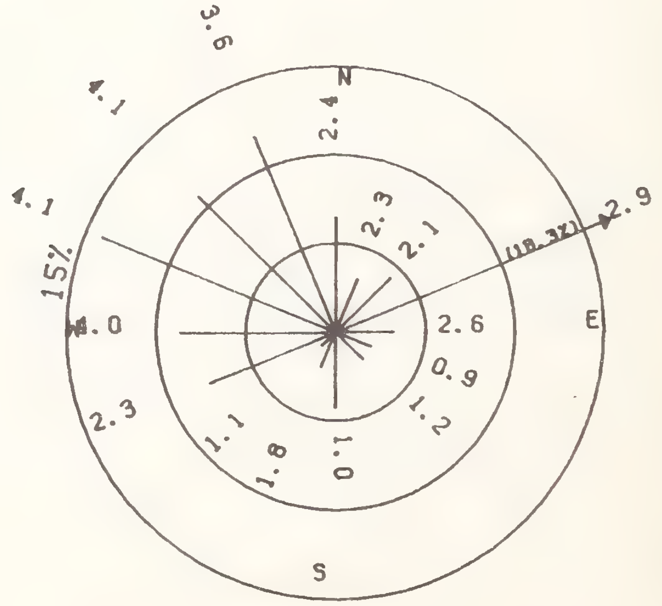
HOURS 1 TO 300
CALM 0.0%
(TOTAL HOURS 93)



HOURS 4 TO 600
CALM 0.0%
(TOTAL HOURS 93)



HOURS 7 TO 900
CALM 0.0%
(TOTAL HOURS 93)



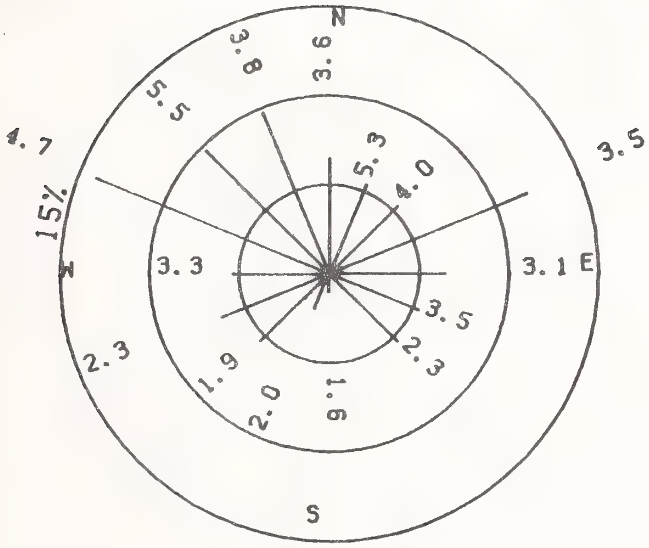
HOURS 10 TO 1200
CALM 0.0%
(TOTAL HOURS 93)

Figure 66

SURFACE WIND ROSES

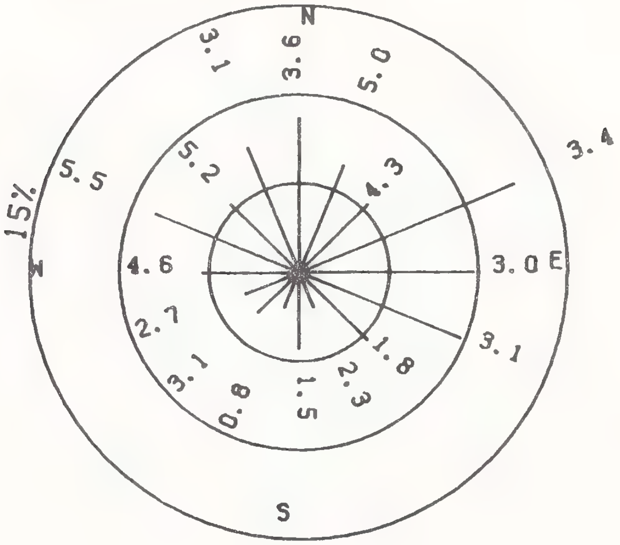
SITE: 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR MAY 1982

BILLINGS MONTANA



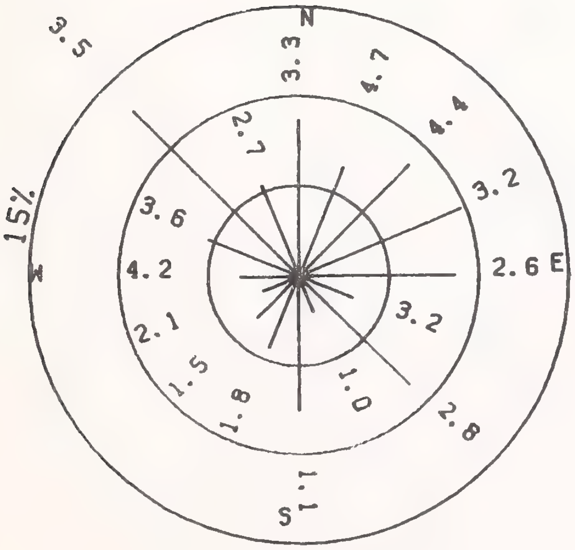
HOURS 13 TO 1500

CALM 0.0%
(TOTAL HOURS 93)



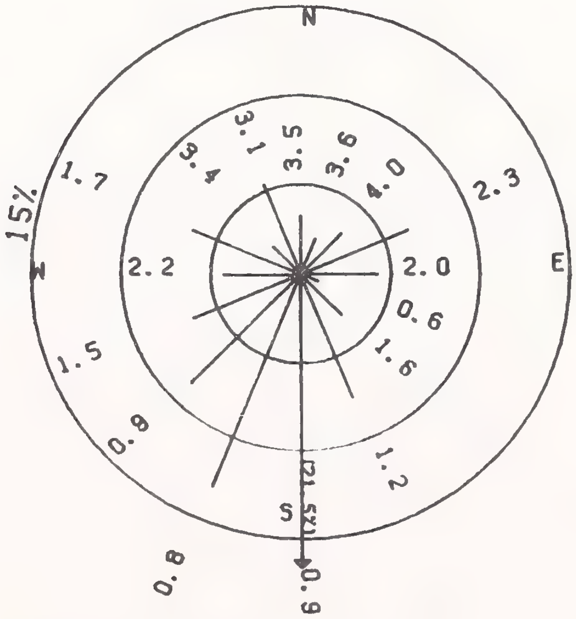
HOURS 16 TO 1800

CALM 0.0%
(TOTAL HOURS 93)



HOURS 19 TO 2100

CALM 0.0%
(TOTAL HOURS 93)



HOURS 22 TO 2400

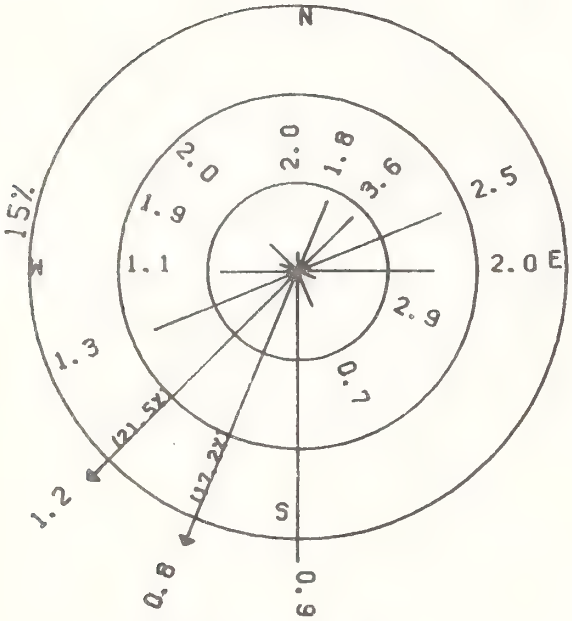
CALM 1.1%
(TOTAL HOURS 92)

Figure 67

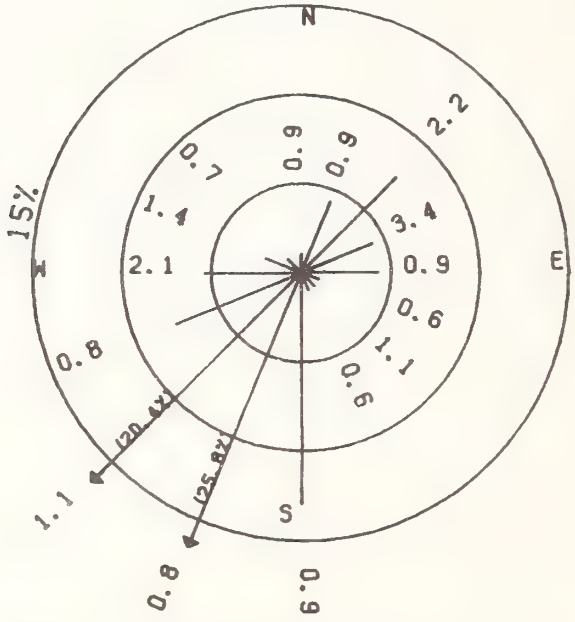
SURFACE WIND ROSES

SITE: 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR AUGUST 1982

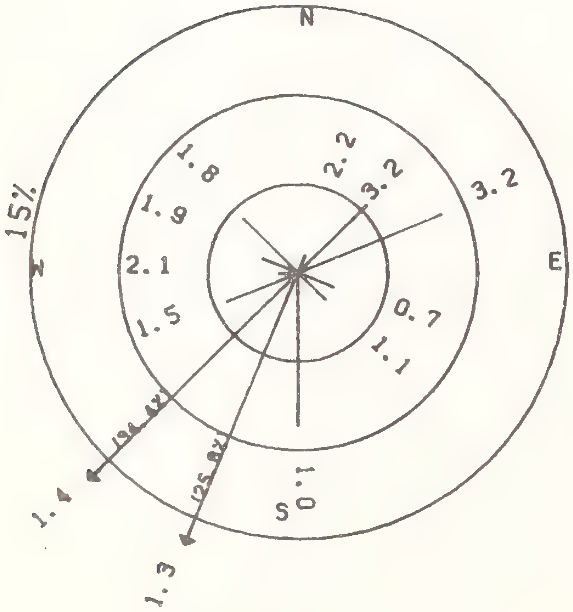
BILLINGS MONTANA



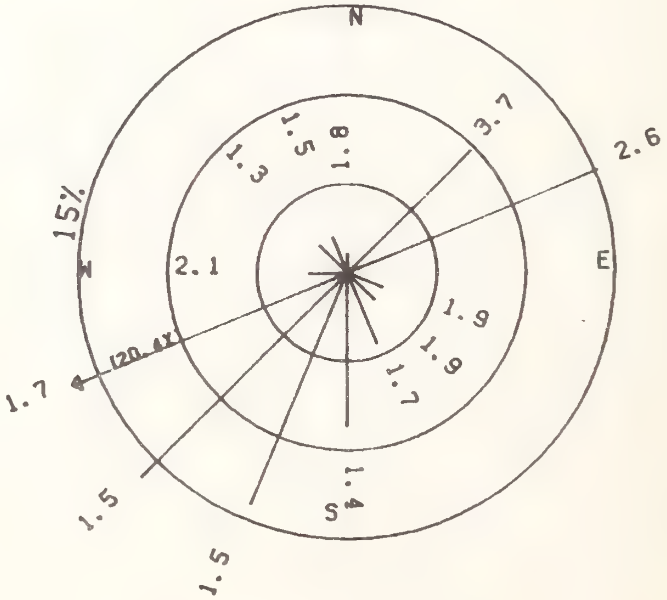
HOURS 1 TO 300
CALM 0.0%
(TOTAL HOURS 93)



HOURS 4 TO 600
CALM 0.0%
(TOTAL HOURS 93)



HOURS 7 TO 900
CALM 0.0%
(TOTAL HOURS 93)



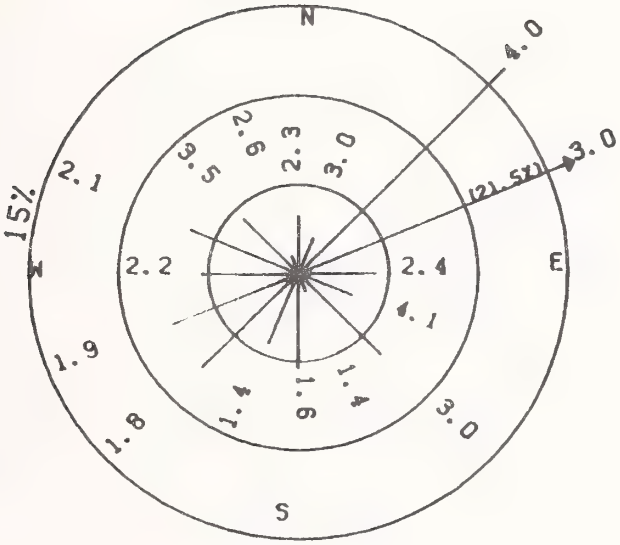
HOURS 10 TO 1200
CALM 0.0%
(TOTAL HOURS 93)

Figure 68

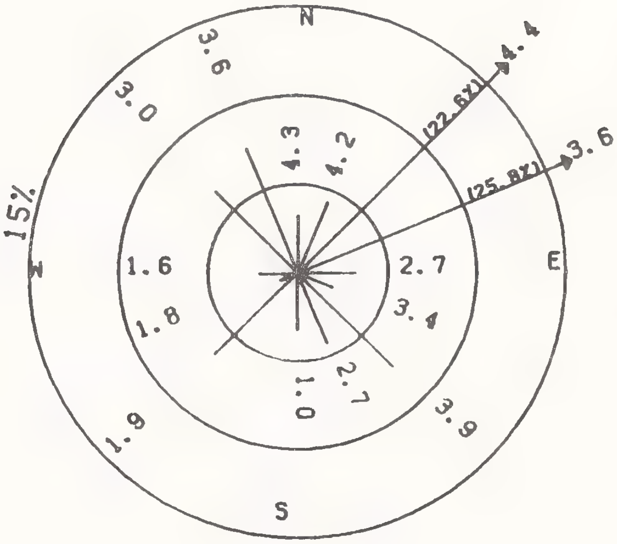
SURFACE WIND ROSES

SITE: 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR AUGUST 1982

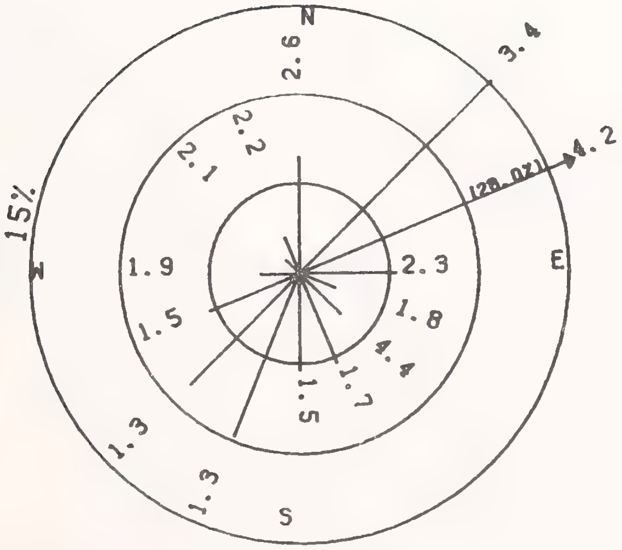
BILLINGS MONTANA



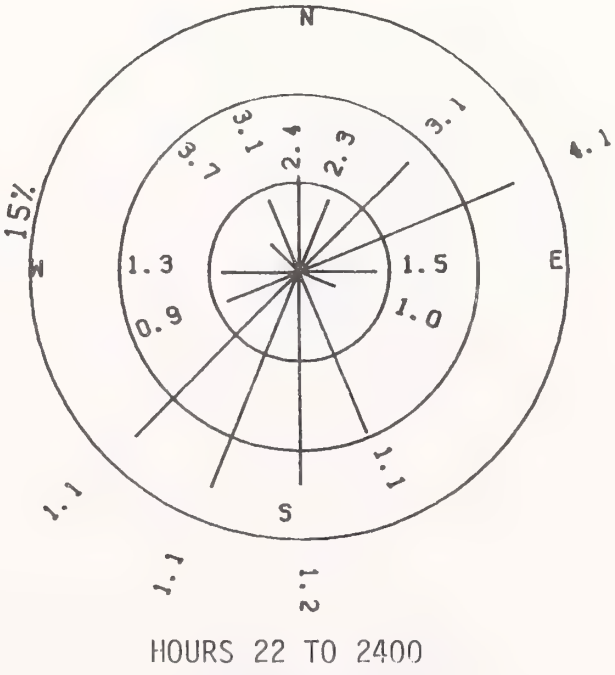
HOURS 13 TO 1500
CALM 0.0%
(TOTAL HOURS 93)



HOURS 16 TO 1800
CALM 0.0%
(TOTAL HOURS 93)



HOURS 19 TO 2100
CALM 0.0%
(TOTAL HOURS 93)



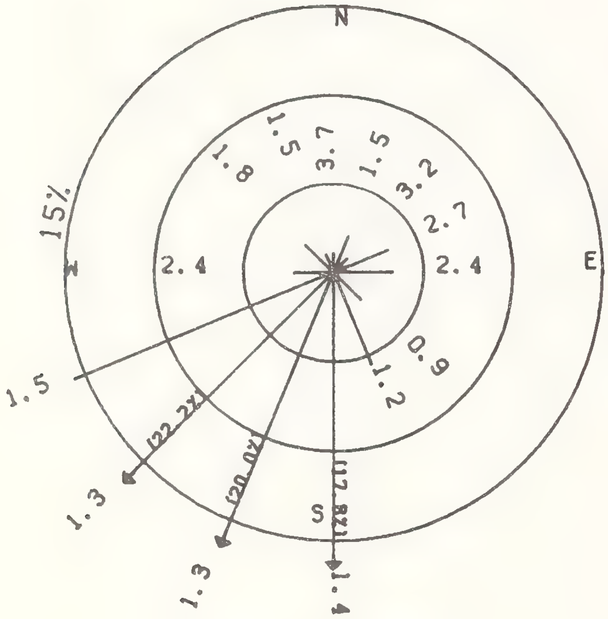
HOURS 22 TO 2400
CALM 0.0%
(TOTAL HOURS 93)

Figure 69

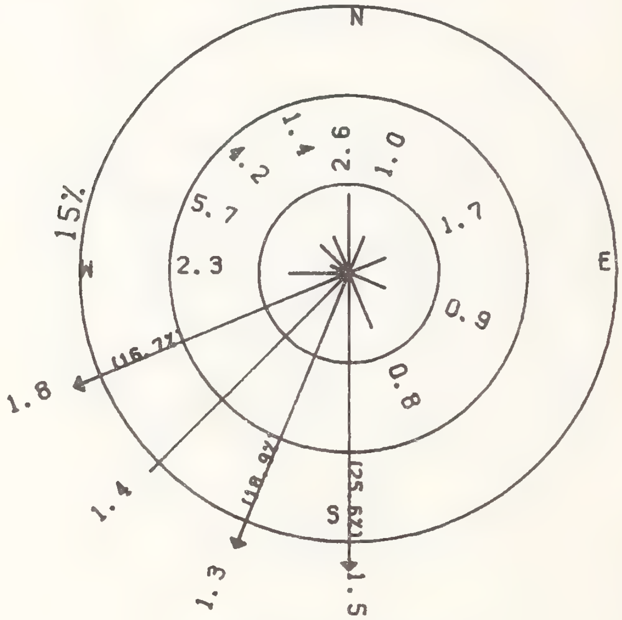
SURFACE WIND ROSES

SITE: 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR NOVEMBER 1981

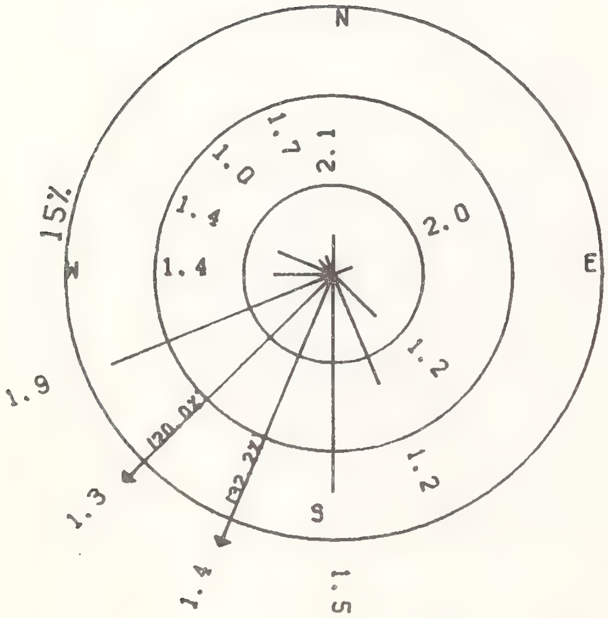
BILLINGS MONTANA



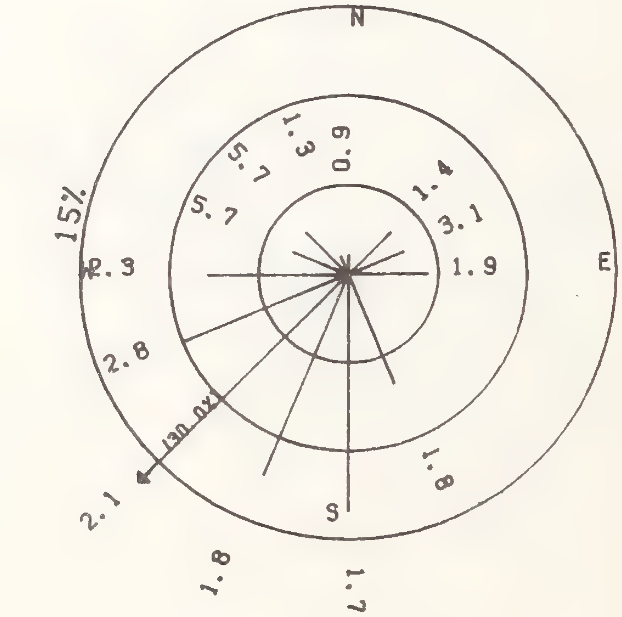
HOURS 1 TO 300
CALM 0.0%
(TOTAL HOURS 90)



HOURS 4 TO 600
CALM 0.0%
(TOTAL HOURS 90)



HOURS 7 TO 900
CALM 0.0%
(TOTAL HOURS 90)



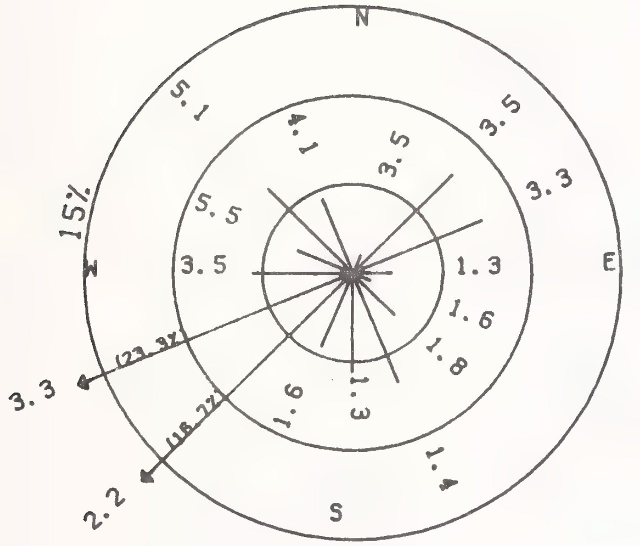
HOURS 10 TO 1200
CALM 0.0%
(TOTAL HOURS 90)

Figure 70

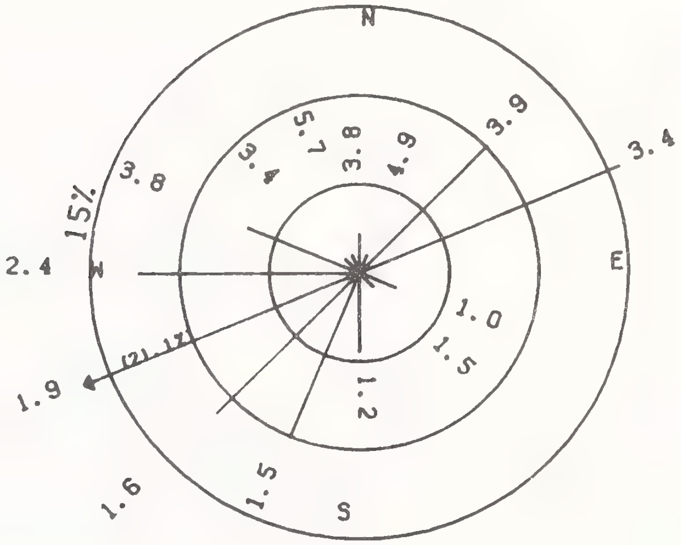
SURFACE WIND ROSES

SITE: 80062 TAFT SCHOOL--DIURNAL WIND ROSES FOR NOVEMBER 1981

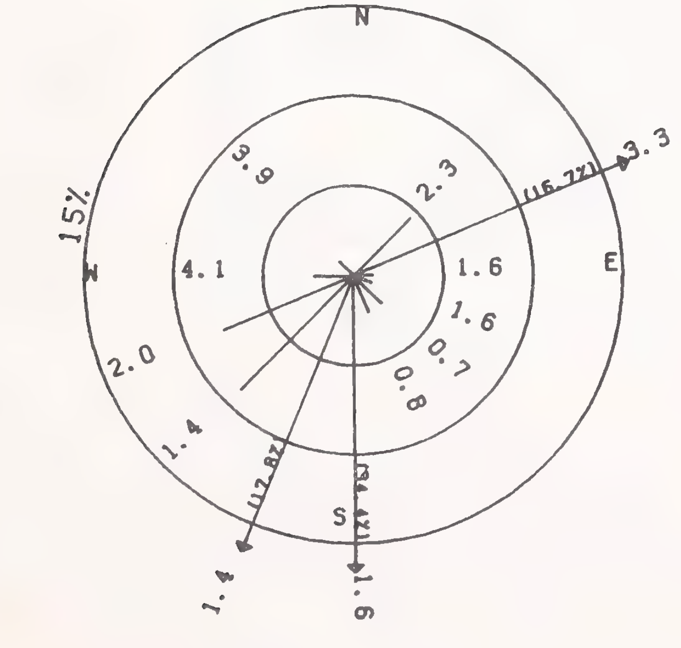
BILLINGS MONTANA



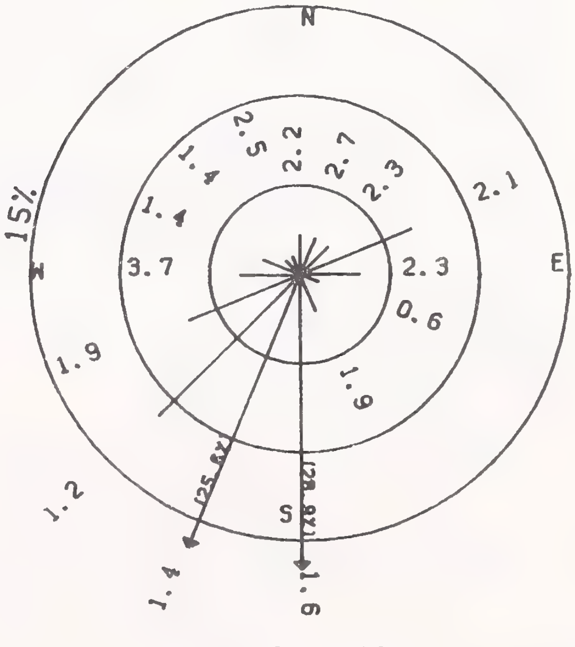
HOURS 13 TO 1500
CALM 0.0%
(TOTAL HOURS 90)



HOURS 16 TO 1800
CALM 0.0%
(TOTAL HOURS 90)



HOURS 19 TO 2100
CALM 0.0%
(TOTAL HOURS 90)



HOURS 22 TO 2400
CALM 0.0%
(TOTAL HOURS 90)

Figure 71

```
       PROJECT: CB5942                  MEMBER: FB5942FM                 DATE: 84/03/21
       LIBRARY: TSOLIB                  LEVEL:  01.02                    TIME: 14:04
       TYPE:    DATA                    USERID: CB5942                   PAGE: 01 OF 01
START
 COL   ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8

  1    //CB5942FM JOB (05610,53),5942.14.MEYERS,
  1    //          CLASS=Q,PRTY=1,NOTIFY=CB5942,TIME=(,30)
  1    /*SETUP 013217
  1    //REPORT EXEC PGM=COMPLEX2
  1    //STEPLIB DD DSN=F05.AIRLIB,DISP=SHR
  1    //* *** COMMENT CARD FOR COMPLEX II ***
  1    //* *** PAPER OUT OPTION ***
  1    //FT05F001 DD *
  1    MODEL RUN: COMPLEX II FOR BILLINGS INDUSTRIES  RUN DATE:01-16-84
  1    MET DATA: JANUARY 1982--CRSMET TAPE
  1    INPUT BY: S. STERNBERG, AIR QUALITY BUREAU, SDHES
  1    82,1,1,31,24,3,17,0,1.,0.3048,0.
  1    1,1,1,1,0,0,0,0,1,1,1,1,1,1,1,1,0,0,1,0,0,0,0,0,1
  1    10.,.10,.10,.10,.10,.10,.10,.5,.5,.5,.5,.0,.0,10.
  1    MPCO-COR       695.9  5071.9  315.00           106.7    405.     3.51  33.50 3110
  1    CON-B PLT      695.0  5072.5   64.90            82.3    428.     2.90   6.60 3110
  1    CON-FCC REG    695.0  5072.5   40.00            53.6    538.     0.91  48.12 3110
  1    GT WEST        694.8  5071.2   41.10            36.6    333.     3.58   9.42 3120
  1    EXX-CAT        699.5  5076.4  118.40            63.4    474.     2.95   7.85 3100
  1    EXX-COKE       699.5  5076.4   57.40            64.0    528.     2.46   6.86 3100
  1    EXX-F-2        699.5  5076.4   87.90            64.0    539.     2.05  12.54 3100
  1    EXX-F-700      699.5  5076.4    6.50            63.4    473.     2.82   2.82 3100
  1    MT SULF-CLAS   699.8  5076.3   72.70            30.5    616.     1.07   8.82 3100
  1    CEN-#3         673.9  5058.5   46.10            60.8    569.     1.31  12.66 3280
  1    CEN-#4         673.9  5058.5   44.50            60.8    584.     1.31  12.48 3280
  1    CEN-#5         673.9  5058.5   44.50            60.8    546.     1.31  11.68 3280
  1    CEN-CR-MN      673.9  5058.5   15.00            60.8    483.     2.35   4.13 3280
  1    CEN-CR-PR      673.9  5058.5    5.10            26.5    720.     1.77   6.21 3280
  1    CEN-ALKY-HOT   673.9  5058.5    4.70            30.5    691.     1.98   6.53 3280
  1    CEN-SULF-PLT   674.1  5058.2   30.00            60.8    810.     0.81   7.58 3280
  1    CEN-FCC        673.9  5058.5   75.60            60.7    552.     2.04  13.90 3280
  1    ENDP
  1    00080,82,00080,82
  1    B061-MET     695.9   5074.6         2.    3110.
  1    B062-TAF     694.8   5072.0         2.    3115.
  1    B063-SHA     702.1   5077.5         2.    3130.
  1    B064-NJN     700.9   5078.4         2.    3060.
  1    B065-LOC     699.9   5075.6         2.    3140.
  1    B066-COB     697.6   5073.3         2.    3380.
  1    L014-NFM     672.2   5059.5         2.    3270.
  1    L015-LBN     675.1   5059.5         2.    3280.
  1    ENDP
  1    /*
  1    //FT06F001 DD SYSOUT=A
  1    //FT11F001 DD DSN=F05.CRSTER.METOUT,
  1    //           DISP=(OLD,KEEP),UNIT=TAPE,
  1    //           VOL=SER=013217,
  1    //           DCB=(RECFM=VBS,LRECL=688,BLKSIZE=13760,BFTEK=A)
  1    //FT10F001 DD DUMMY
  1    //FT12F001 DD DUMMY
  1    //FT13F001 DD DUMMY
  1    //FT14F001 DD DUMMY
  1    //FT15F001 DD DUMMY
  1    //
```

Figure 72

```
        PROJECT: CB5942                  MEMBER: EB5942FP                   DATE: 84/03/21
        LIBRARY: TSOLIB                  LEVEL:  01.01                      TIME: 14:04
        TYPE:    DATA                    USERID: CB5942                     PAGE: 01 OF 01
  START
   COL  ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8

    1   //CB5942FP JOB (05610,53),5942.14.MEYERS,
    1   //         CLASS=Q,PRTY=1,NOTIFY=CB5942,TIME=(,30)
    1   /*SETUP 013217
    1   //REPORT EXEC PGM=COMPLEX2
    1   //STEPLIB DD DSN=F05.AIRLIB,DISP=SHR
    1   //* *** COMMENT CARD FOR COMPLEX II ***
    1   //* *** PAPER OUT OPTION ***
    1   //FT05F001 DD *
    1   MODEL RUN: COMPLEX II FOR BILLINGS INDUSTRIES  RUN DATE:01-16-84
    1   MET DATA: MAY 1982--CRSMET TAPE
    1   INPUT BY: S. STERNBERG, AIR QUALITY BUREAU, SDHES
    1   82,121,1,31,24,3,14,0,1.,0.3048,0.
    1   1,1,1,1,0,0,0,0,1,1,1,1,1,1,1,1,0,0,1,0,0,0,0,0,1
    1   10.,.10,.10,.10,.10,.10,.10,.5,.5,.5,.5,.0,.0,10.
    1   CON-B PLT      695.0  5072.5   64.90            82.3   428.    2.90    6.60 3110
    1   CON-FCC REG    695.0  5072.5   40.00            53.6   538.    0.91   48.12 3110
    1   EXX-COKE       699.5  5076.4   57.40            64.0   528.    2.46    6.86 3100
    1   EXX-F-2        699.5  5076.4   87.90            64.0   539.    2.05   12.54 3100
    1   EXX-F-700      699.5  5076.4    6.50            63.4   473.    2.82    2.82 3100
    1   MT SULF-CLAS   699.8  5076.3   72.70            30.5   616.    1.07    8.82 3100
    1   CEN-#3         673.9  5058.5   46.10            60.8   569.    1.31   12.66 3280
    1   CEN-#4         673.9  5058.5   44.50            60.8   584.    1.31   12.48 3280
    1   CEN-#5         673.9  5058.5   44.50            60.8   546.    1.31   11.68 3280
    1   CEN-CR-MN      673.9  5058.5   15.00            60.8   483.    2.35    4.13 3280
    1   CEN-CR-PR      673.9  5058.5    5.10            26.5   720.    1.77    6.21 3280
    1   CEN-ALKY-HOT   673.9  5058.5    4.70            30.5   691.    1.98    6.53 3280
    1   CEN-SULF-PLT   674.1  5058.2   30.00            60.8   810.    0.81    7.58 3280
    1   CEN-FCC        673.9  5058.5   75.60            60.7   552.    2.04   13.90 3280
    1   ENDP
    1   00080,82,00080,82
    1   B061-MET     695.9    5074.6        2.      3110.
    1   B062-TAF     694.8    5072.0        2.      3115.
    1   B063-SHA     702.1    5077.5        2.      3130.
    1   B064-NJN     700.9    5078.4        2.      3060.
    1   B065-LCC     699.9    5075.6        2.      3140.
    1   B066-COB     697.6    5073.3        2.      3380.
    1   L014-NFM     672.2    5059.5        2.      3270.
    1   L015-LBN     675.1    5059.5        2.      3280.
    1   ENDR
    1   /*
    1   //FT06F001 DD SYSOUT=A
    1   //FT11F001 DD DSN=F05.CRSTER.METOUT,
    1   //           DISP=(OLD,KEEP),UNIT=TAPE,
    1   //           VOL=SER=013217,
    1   //           DCB=(RECFM=VBS,LRECL=688,BLKSIZE=13760,BFTEK=A)
    1   //FT10F001 DD DUMMY
    1   //FT12F001 DD DUMMY
    1   //FT13F001 DD DUMMY
    1   //FT14F001 DD DUMMY
    1   //FT15F001 DD DUMMY
    1   //
```

Figure 73

```
      PROJECT: CB5942                MEMBER: EB5942FS                   DATE: 84/03/21
      LIBRARY: TSOLIB                LEVEL:  01.01                      TIME: 14:04
      TYPE:    DATA                  USERID: CB5942                     PAGE: 01 OF 01
START
 COL  ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8

   1  //CB5942FS JOB (05610,53),5942.14.MEYERS,
   1  //         CLASS=Q,PRTY=1,NOTIFY=CB5942,TIME=(,30)
   1  /*SETUP 013217
   1  //REPORT EXEC PGM=COMPLEX2
   1  //STEPLIB DD DSN=F05.AIRLIB,DISP=SHR
   1  //* *** COMMENT CARD FOR COMPLEX II ***
   1  //* *** PAPER OUT OPTION ***
   1  //FT05F001 DD *
   1  MODEL RUN: COMPLEX II FOR BILLINGS INDUSTRIES  RUN DATE=01-16-84
   1  MET DATA: AUGUST 1982--CRSMET TAPE
   1  INPUT BY: S. STERNBERG, AIR QUALITY BUREAU, SDHES
   1  82,213,1,31,24,3,14,0,1.,0.3048,0.
   1  1,1,1,1,0,0,0,0,1,1,1,1,1,1,1,1,0,0,1,0,0,0,0,0,1
   1  10.,.10,.10,.10,.10,.10,.10,.5,.5,.5,.5,.0,.0,10.
   1  CON-B PLT      695.0  5072.5    64.90               82.3   428.     2.90  6.60 3110
   1  CON-FCC REG    695.0  5072.5    40.00               53.6   538.     0.91 48.12 3110
   1  EXX-CAT        699.5  5076.4   118.40               63.4   474.     2.95  7.85 3100
   1  EXX-COKE       699.5  5076.4    57.40               64.0   528.     2.46  6.86 3100
   1  EXX-F-2        699.5  5076.4    87.90               64.0   539.     2.05 12.54 3100
   1  MT SULF-CLAS   699.8  5076.3    72.70               30.5   616.     1.07  8.82 3100
   1  CEN-#3         673.9  5058.5    46.10               60.8   569.     1.31 12.66 3280
   1  CEN-#4         673.9  5058.5    44.50               60.8   584.     1.31 12.48 3280
   1  CEN-#5         673.9  5058.5    44.50               60.8   546.     1.31 11.68 3280
   1  CEN-CR-MN      673.9  5058.5    15.00               60.8   483.     2.35  4.13 3280
   1  CEN-CR-PR      673.9  5058.5     5.10               26.5   720.     1.77  6.21 3280
   1  CEN-ALKY-HOT   673.9  5058.5     4.70               30.5   691.     1.98  6.53 3280
   1  CEN-SULF-PLT   674.1  5058.2    30.00               60.8   810.     0.81  7.58 3280
   1  CEN-FCC        673.9  5058.5    75.60               60.7   552.     2.04 13.90 3280
   1  ENDP
   1  00080,82,00080,82
   1  B061-MET     695.9    5074.6        2.     3110.
   1  B062-TAF     694.8    5072.0        2.     3115.
   1  B063-SHA     702.1    5077.5        2.     3130.
   1  B064-NJN     700.9    5078.4        2.     3060.
   1  B065-LOC     699.9    5075.6        2.     3140.
   1  B066-COB     697.6    5073.3        2.     3380.
   1  L014-NFM     672.2    5059.5        2.     3270.
   1  L015-LBN     675.1    5059.5        2.     3280.
   1  ENDR
   1  /*
   1  //FT06F001 DD SYSOUT=A
   1  //FT11F001 DD DSN=F05.CRSTER.METOUT,
   1  //          DISP=(OLD,KEEP),UNIT=TAPE,
   1  //          VOL=SER=013217,
   1  //          DCB=(RECFM=VBS,LRECL=688,BLKSIZE=13760,BFTEK=A)
   1  //FT10F001 DD DUMMY
   1  //FT12F001 DD DUMMY
   1  //FT13F001 DD DUMMY
   1  //FT14F001 DD DUMMY
   1  //FT15F001 DD DUMMY
   1  //
```

Figure 74

```
        PROJECT: CB5942                MEMBER: EB5942FV                  DATE: 84/03/21
        LIBRARY: TSOLIB                LEVEL:  01.03                     TIME: 14:04
        TYPE:    DATA                  USERID: CB5942                    PAGE: 01 OF 01
 START
  COL   ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8

   1    //CB5942FV JOB (05610,53),5942.14.MEYERS,
   1    //         CLASS=Q,PRTY=1,NOTIFY=CB5942,TIME=(,30)
   1    /*SETUP 013217
   1    //REPORT EXEC PGM=COMPLEX2
   1    //STEPLIB DD DSN=F05.AIRLIB,DISP=SHR
   1    //* *** COMMENT CARD FOR COMPLEX II ***
   1    //* *** PAPER OUT OPTION ***
   1    //FT05F001 DD *
   1    MODEL RUN: COMPLEX II FOR BILLINGS INDUSTRIFS  RUN DATE:01-16-84
   1    MET DATA: NOVEMBER 1981--CRSMET TAPE
   1    INPUT BY: S. STERNBERG, AIR QUALITY BUREAU, SDHES
   1    82,305,1,30,24,3,17,0,1.,0.3048,0.
   1    1,1,1,1,0,0,0,0,1,1,1,1,1,1,1,1,0,0,1,0,0,0,0,0,1
   1    10.,.10,.10,.10,.10,.10,.10,.5,.5,.5,.5,.0,.0,10.
   1    MPCO-COR       695.9  5071.9  315.00           106.7   405.    3.51  33.50 3110
   1    CON-B PLT      695.0  5072.5   64.90            82.3   428.    2.90   6.60 3110
   1    CON-FCC REG    695.0  5072.5   40.00            53.6   538.    0.91  48.12 3110
   1    GT WEST        694.8  5071.2   41.10            36.6   333.    3.58   9.42 3120
   1    EXX-CAT        699.5  5076.4  118.40            63.4   474.    2.95   7.85 3100
   1    EXX-COKE       699.5  5076.4   57.40            64.0   528.    2.46   6.86 3100
   1    EXX-F-2        699.5  5076.4   87.90            64.0   539.    2.05  12.54 3100
   1    EXX-F-700      699.5  5076.4    6.50            63.4   473.    2.82   2.82 3100
   1    MT SULF-CLAS   699.8  5076.3   72.70            30.5   616.    1.07   8.82 3100
   1    CEN-#3         673.9  5058.5   46.10            60.8   569.    1.31  12.66 3280
   1    CEN-#4         673.9  5058.5   44.50            60.8   584.    1.31  12.48 3280
   1    CEN-#5         673.9  5058.5   44.50            60.8   546.    1.31  11.68 3280
   1    CEN-CR-MN      673.9  5058.5   15.00            60.8   483.    2.35   4.13 3280
   1    CEN-CR-PR      673.9  5058.5    5.10            26.5   720.    1.77   6.21 3280
   1    CEN-ALKY-HOT   673.9  5058.5    4.70            30.5   691.    1.98   6.53 3280
   1    CEN-SULF-PLT   674.1  5058.2   30.00            60.8   810.    0.81   7.58 3280
   1    CEN-FCC        673.9  5058.5   75.60            60.7   552.    2.04  13.90 3280
   1    ENDP
   1    00080,82,00080,82
   1    B061-MET     695.9    5074.6        2.     3110.
   1    B062-TAF     694.8    5072.0        2.     3115.
   1    B063-SHA     702.1    5077.5        2.     3130.
   1    B064-NJN     700.9    5078.4        2.     3060.
   1    B065-LOC     699.9    5075.6        2.     3140.
   1    B066-COB     697.6    5073.3        2.     3380.
   1    L014-NFM     672.2    5059.5        2.     3270.
   1    L015-LBN     675.1    5059.5        2.     3280.
   1    ENDR
   1    /*
   1    //FT06F001 DD SYSOUT=A
   1    //FT11F001 DD DSN=F05.CRSTER.METOUT,
   1    //         DISP=(OLD,KEEP),UNIT=TAPE,
   1    //         VOL=SER=013217,
   1    //         DCB=(RECFM=VBS,LRECL=688,BLKSIZE=13760,BFTEK=A)
   1    //FT10F001 DD DUMMY
   1    //FT12F001 DD DUMMY
   1    //FT13F001 DD DUMMY
   1    //FT14F001 DD DUMMY
   1    //FT15F001 DD DUMMY
   1    //
```

Figure 75

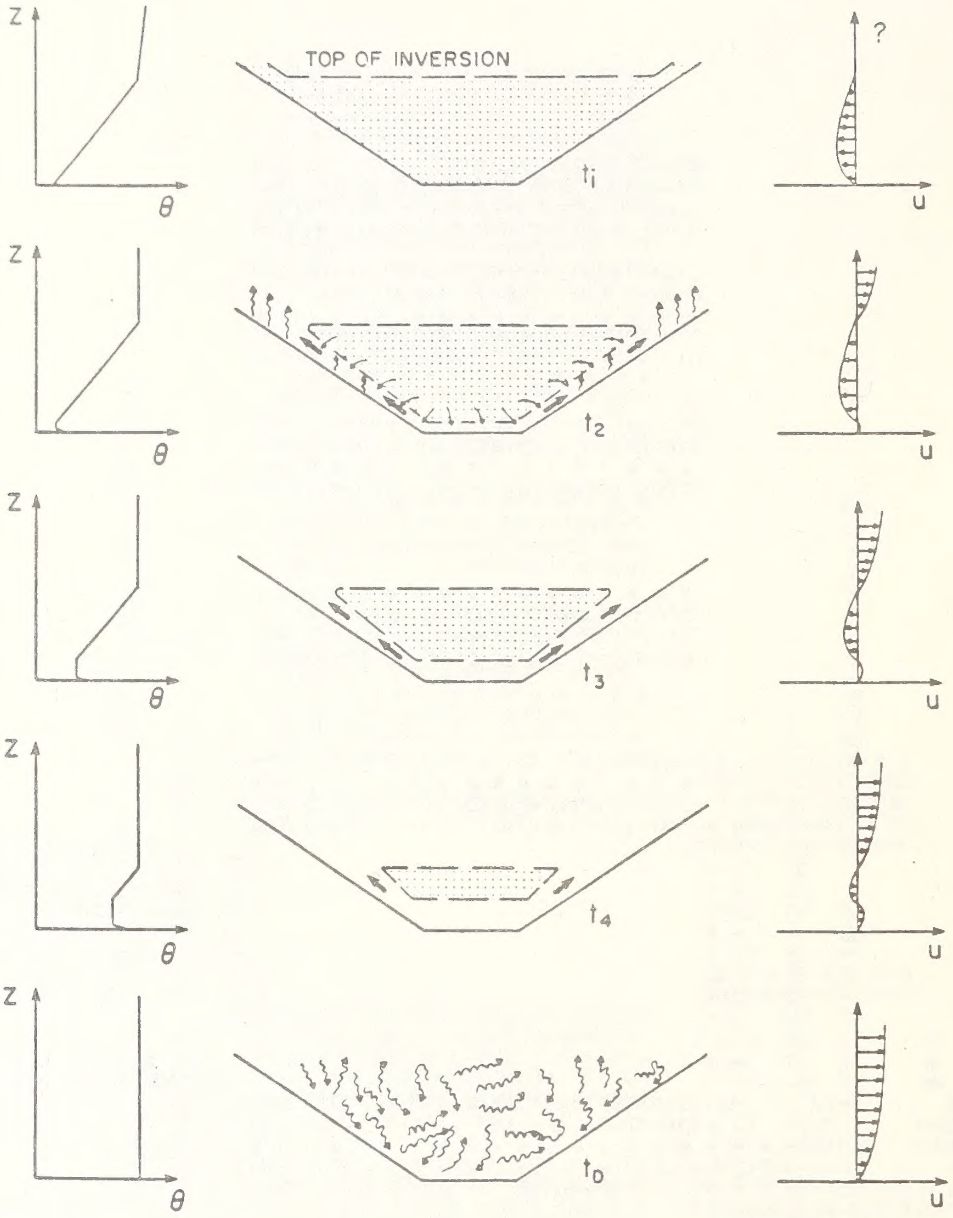


Figure 76. Sequence of valley cross sections illustrating the breakup of a valley temperature inversion beginning at sunrise (time t_i) and ending at the time of inversion destruction (t_d), showing corresponding profiles of potential temperature (θ) and up-valley wind component (u). The inversion is destroyed by the upward growth from the ground of a convective boundary layer and the subsidence or sinking of the temperature inversion layer after sunrise. Down-valley winds continue to blow within the temperature inversion layer after sunrise as the layer is destroyed. Upslope flows that develop in convective boundary layers over the valley sidewalls are responsible for the compensating descending motions within the temperature inversion layer.